THE AMERICAN JOURNAL of Proctology

The Authoritative Journal of Proctology, Gastroenterology and Allied Subjects.

OFFICIAL PUBLICATION OF THE INTERNATIONAL ACADEMY OF PROCTOLOGY

Carcinoma of the Colon and Rectum — Part 2

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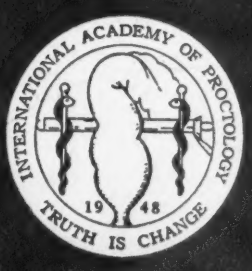

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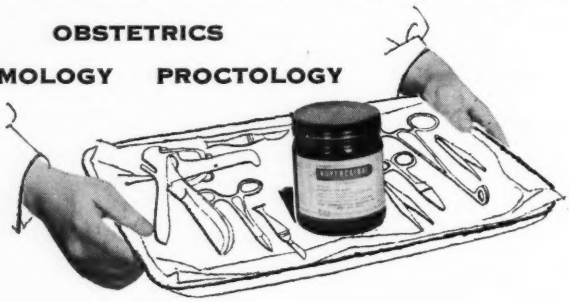

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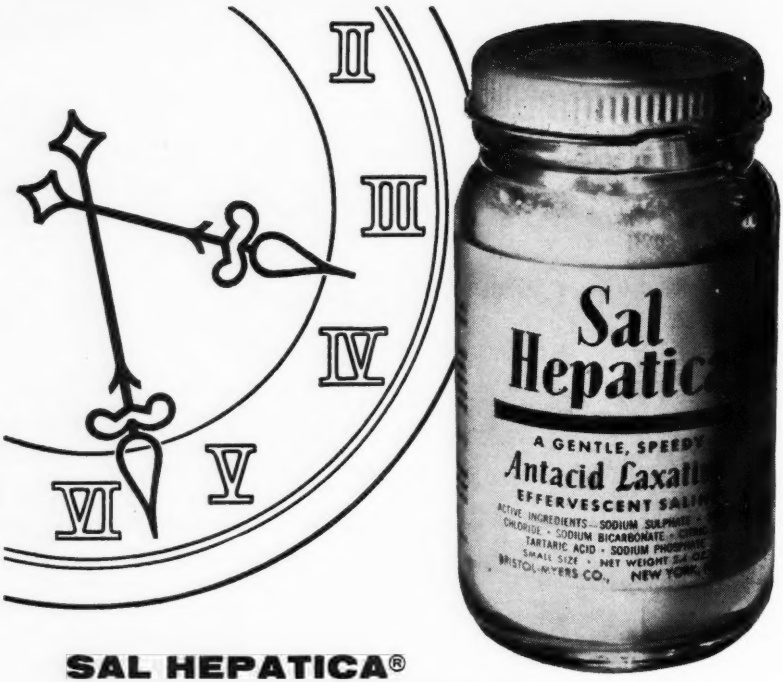

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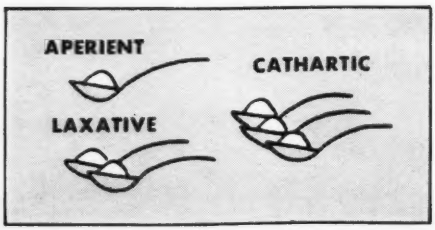

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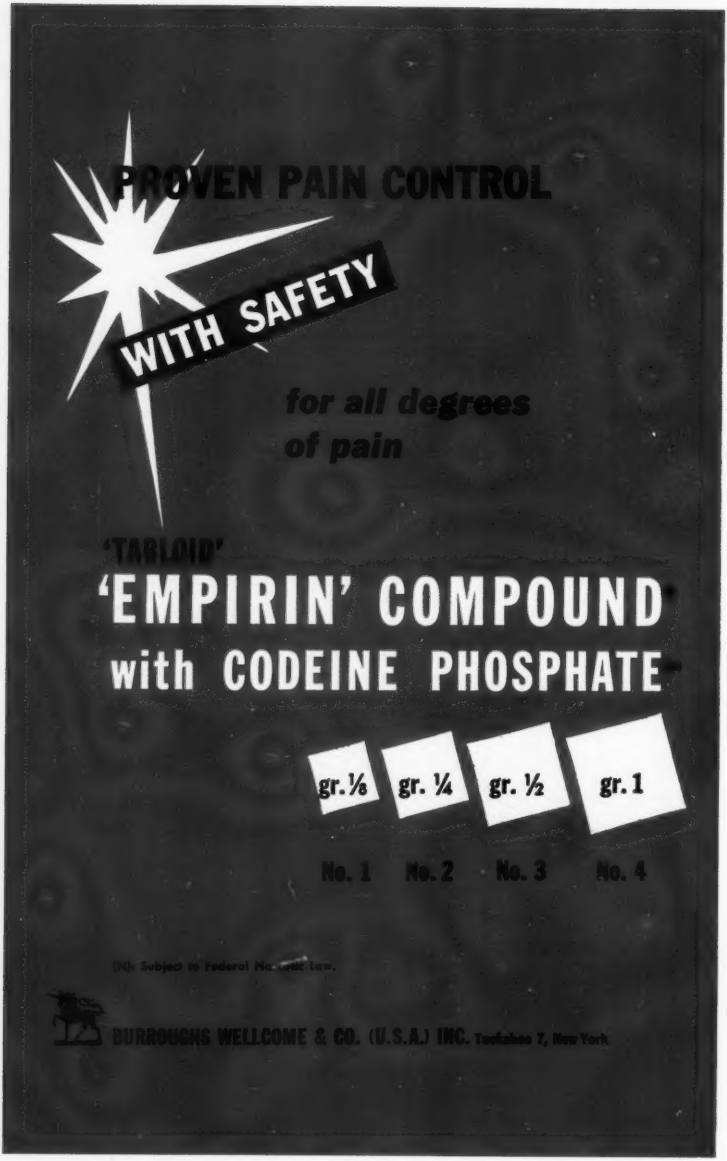
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Carcinoma Of The Colon And Rectum

Newer Developments in Diagnosis and Therapy in 1953*

EARL J. HALLIGAN, M.D., F.A.C.S., F.I.C.S., F.I.A.P.
J. KENNETH CATLAW, M.D., F.A.C.S., F.I.C.S., F.I.A.P.

PART 2

Indications For Operation Carcinoma of the colon and rectum should be operated upon unless the general condition of the patient is so poor that the risk is too great, as in advanced tuberculosis or heart disease, or the malignancy has progressed too far, as in cases with massive involvement of the liver and distant metastases, ascites, etc. There is a definite tendency toward one-stage resection and anastomosis in colon cases, or a single stage abodmino-perineal in rectal cases. However, a multiple stage operation should be used if necessary. This all depends upon the location, extent and spread of the lesion, condition of the patient, presence or absence of infection or/and obstruction and the personal preference and capability of the surgeon. The carcinoma with its involved contiguous structures, its lymphatics and venous spread, must be adequately removed, and even distant metastasis, such as a solitary nodule in the liver or an entire lobe, may be excised. Pelvic evisceration at times may be advisable. Economic problems, such as a greater number of hospital days, should be considered, but if it in any way militates against a lower mortality or a higher five-year survival rate it should be disregarded.

Small lesions may prove to be disappointing, while bulky lesions may be removed with excellent results. Moderate metastasis in the liver does not contraindicate the removal of the malignant lesion, because life is more comfortable after removal, and it may have some retarding effect on the secondary growth.

At the time of operation a frozen section of the ovaries should be done, and if they are involved a complete removal of the uterus and adnexae is advisable. If the vagina is involved the prognosis is poor, particularly if recto-sigmoid fistula is present. If the vagina is involved it should be resected completely.

The degree of malignant involvement equals the degree of fixation, with solid attachment. Sugarbaker.[31] The bowel wall is invaded in 98 per cent of the cases, and adjacent structures in 40 per cent. Sixty-seven per cent of those with venous spread have visceral metastasis. Brown and Warren.[7]

Selective distribution of cancer cells apparently occurs. No one knows why. It may be that metabolic, chemical or enzymatic factors determine this. Abortive

*Presented before the Fifth Annual Convention, International Academy of Proctology, May 28-31, 1953, New York, N. Y.

tumors that never grow are found in the lung, while they invariably flourish in the liver. Bacon[3].

Contra-Indications to Operation The usual contra-indications to operation are: 1. Broad fixation of the lesions to retroperitoneal structures, 2. Extensive involvement of mesenteric nodes and veins, 3. Peritoneal implants, 4. Involvement of the base of the bladder, fixation and infiltration of the lateral pelvic walls and ligaments, these usually indicate inoperability in carcinoma of the rectum.

Involvement of such structures as the uterus, adnexa, small bowel, abdominal wall, dome of the bladder, stomach, duodenum, spleen, gall bladder liver, pancreas, seminal vesicles, appendix, diaphragm, anterior abdominal wall, vagina and prostate, does not indicate inoperability because these metastasis can be resected with these organs. Indications for exenteration are not as good in carcinoma of the rectum as in carcinoma of the cervix because one-third of carcinomas of the rectum have venous spread and metastasis to the liver.

Resection of the abdominal wall offers no problem since it can be replaced by use of tantalum mesh. The problem of peritonealization no longer exists since we know the peritoneum regenerates, and we do not even have to construct a new pelvic floor in the extensive resection of the rectum (use rubber dam and packing) or in pelvic exenteration.

Operation The problem of which operation to choose is controversial and the operations are many and varied, but one should be familiar with all of them and able to utilize any one of them. All agree that it must be adequate. Again the question arises, which is adequate? By the time the patient is operated upon, less than one-half, that is 43 per cent of the colon tumors and slightly over one-half, 53 per cent of the rectal tumors—have metastasized to the regional nodes. Consequently, the outlook for five-year survivals in this group is naturally less cheerful, according to follow-up statistics. Much depends on the biological characteristics of the growth.

Primary resection and immediate anastomosis is the ideal operation and is rapidly gaining favor with the majority of surgeons. However, there are certain contra-indications:

1. The presence of obstruction.
2. Marked obesity of the mesentery.
3. Old age or severe complicating disease where one needs to hurry.
4. Pericolonic infection.
5. Or in those cases where the bowel is not properly prepared. This operation (resection and immediate anastomosis) can be used in all cases from the cecum down to and including the recto-sigmoid.

Adequate mobilization with wide excision of the bowel and the mesentery is essential. There should be an adequate blood supply in the ends to be anastomosed, no tension on the suture line, and apposition should be accurate, stitches being meticulously placed. Whether one uses the open or closed method is immaterial. Theoretically, the closed method is superior, but actually, the open method, if the bowel is properly prepared and aseptic technique followed, yields results that are just as good. We have used both methods; at present we favor the open method.

The outer or serosal layer is sewn with interrupted sutures of fine silk, posteriorly. For the inner layer we use a continuous through and through stitch of chromic "O" catgut posteriorly and anteriorly a Connel stitch is used. The anterior serosal layer is then closed with interrupted sutures of silk. However, one layer closure with interrupted sutures of silk or cotton are just as satisfactory. Peritoneum is closed with "D" chromic catgut. The fascia and skin are routinely closed with fine stainless steel wire.

In the face of acute intestinal obstruction, decompression is the prime requisite.

In the right half of the colon obstruction is uncommon, and if it occurs it usually does so late in the disease. However, one may have a growth just at the ileo-cecal valve or an intussusception of a resectable tumor, and decompression may be accomplished by a Miller-Abbott or Harris tube.

Even in obstruction further distally, as in the hepatic flexure, if the ileo-cecal valve is incompetent, decompression may be obtained by using a long suction tube; the competency of the ileocecal valve may be determined by the presence or absence of distention, with or without fluid levels in the small intestine, in a scout film.

If decompression is not satisfactory by tube, then ileo-transverse solostomy should be performed. In cases where the ileocecal valve is competent, an ileostomy may be done by threading a tube into the ileum through the ileo-cecal valve, thus decompressing it, or, better still, one can do a resection and primary anastomosis of the small bowel to colon if it is not too distended, or a rapid Lahey-Mickulicz procedure if it is distended. This can also be done on those with severe complications, such as cardio-vascular disease or where there have been two obstructions, such as we have encountered on several occasions.

For acute obstruction in the left half of the colon and rectosigmoid with extreme distention and poor condition of the patient, we prefer an exteriorizing type of cecostomy, often under local anesthesia. The distended cecum is pulled out through a McBurney incision and sewn to the skin with four to six "O" chromic sutures. This is then walled off with iodoform gauze and the incision closed. Or, one may take two curved clamps, grasp the cecum, exteriorize it and strap the clamps on the abdomen. If the cecum is markedly thinned out, one can insert a fine hypodermic needle in the cecum, allow the escape of gas, and the distended organ will contract down to a thickness where it can be sutured, or, the clamps used, then opened 24 to 48 hours later; this is very useful in the very sick, delayed obstructive type and is often life saving. However, a few days later, if the colon is packed with feces, transverse colostomy can be done, or a Miller-Abbott tube inserted in the opening in the cecum and the balloon inflated. Peristalsis will carry the tube down to the obstruction, and the colon can be irrigated through the two-way tube, until it is thoroughly cleansed.

Transverse colostomy on the right side, particularly through a transverse incision, is usually advocated in obstruction of the left half of the colon. Operation can be done more easily because of its motility, and it can be brought out through the abdominal wall with less danger of peritonitis. This allows more thorough cleansing of the colon.

However, it has the disadvantage of sometimes being high up under the ribs. It is not quite as simple as an exteriorizing cecostomy, and may interfere with mobilization of the distal bowel at a later stage operation. Fortunately, most obstructions in the colon are incomplete, and are subacute or chronic in nature and can be relieved by diet, irrigation and the use of sulfasuxidine, and primary resection and immediate anastomosis can be done. The Lahey-Mickulicz or Rankin obstruction resection is done when the indications previously described are present.

In very obese people, or those that have fat-infiltrated mesenteries, or in the presence of pericolonic infection, or if the obstruction is complete in the left half of the colon, stage procedures are definitely indicated. A primary decompression operation, such as cecostomy or transverse colostomy, or a Devine defunctioning colostomy (seldom done now and never in obstruction) will permit a radical resection, and immediate anastomosis or obstructive resection to be done at a later date.

In the right half of the colon, with lesions proximal to the hepatic flexure, ileocolectomy with high ligation of the ileo-cecal and right colic vessels should be done, carefully avoiding the vessels supplying the small intestines. If the lesions are in the hepatic flexure or proximal transverse colon, resection should be done well to the left of the mid-transverse colon. Anastomosis of ileum to colon, may be lateral, end-to-end or end-to-side; we prefer end-to-end. The disparity can be equalized by cutting the small intestine at a 45 degree angle, and, if necessary, incising the anti-mesenteric border.

In lesions of the transverse colon wide excision is to be done, if necessary mobilizing both flexures, then end-to-end anastomosis. Lesions of the distal transverse colon and splenic flexure may spread along the branches of the middle colic or left colic vessels. Consequently, wide removal must be done. These are among the most difficult lesions to remove. The diagnosis is made late as a rule. They are high up under the costal arch, usually chronically obstructed. The symptoms are often referred to other parts of the gastro-intestinal tract, such as the gall bladder or appendix. Abscess, perforation and fixation are common. Consequently, while primary resection and anastomosis is ideal, one may have to do a cecostomy first, followed by obstructive resection or a Lahey-Mickulicz, being very careful when removing the mesentery not to damage the vessels of mesentery of the small intestine.

In the descending colon and sigmoid, wide mobilization, including the splenic flexure and descending colon, is advised, and a wide removal of the mesentery because of the danger of lateral spread. Often two or more sigmoidal vessels and their accompanying lymphatics, left colic and the superior hemorrhoidal, may have to be sacrificed. The transverse colon may be anastomosed to recto-sigmoid or sigmoid. End-to-end anastomosis can be accomplished if there are no contra-indications, with or without cecostomy. It is often within this region that complete obstruction takes place, and if the ileo-cecal valve is competent one gets pain and tenderness in the right lower quadrant due to distention of the cecum. These cases are often diagnosed as acute appendicitis. If the obstruction is not relieved, the intra-luminary pressure becomes so great in the cecum that it equals the blood pressure in the vessels, thus shutting off the blood supply; necrosis, ulceration and perforation then occur.

The recto-sigmoid is hard to define. Some authors place it at the level of the reflexion of the anterior rectal peritoneum to the bladder in the male and the vagina in the female; other place it at the side of the peritoneal reflexion laterally to the pelvic wall, at the point where the meso-sigmoid ceases to exist and where the peritoneum, instead of encircling the bowel, leaves the posterior and lateral aspects to merge with the pelvic peritoneum and where the inferior mesenteric vessels leave the meso-sigmoid to lie behind the bowel. This is usually at the level of the second or third sacral segment, about six to eight inches from the anus. Gilchrist and David[13] classified growths as intraperitoneal and extraperitoneal, depending upon whether they are above or below the peritoneal reflexion.

We feel that a high ligation of the inferior mesenteric artery at the aorta should be done, and the intestine removed at least 5 cm. below the growth, with as much mesentery and retroperitoneal tissue as possible. One may, in some cases, ligate just above the left colic branch. (Pinch off the branch to see if the circulation is good).

In these cases of cancer of the recto-sigmoid, anterior resection and anastomosis can be done. In lesions from 3 to 6 cm. from the anal margin the results are the poorest. Here the least operation that should be done is the one-stage Miles

abdomino-perineal; although Bacon[2, 3] does the pull-through operation above the 3 cm. level. In our hands the pull-through operation with preservation of the sphincter has been unsatisfactory both as to control and five-year survivals. We feel that for this level Dixon's[10] suggestions of a two-stage operation might be preferable. The first stage consists of ligating the inferior mesenteric vessels high up and doing a colostomy. At a later stage perform a posterior resection with a very wide lateral dissection.

In this area, particularly for those cases that are colloid carcinomas, a one-stage operation is the procedure of choice. Here the spread is lateral but may also be upwards and downwards. It is in these cases that a high ligation of the inferior mesenteric artery at the aorta, and a wide removal of the bowel with removal of the nodes along the external, internal iliac and obturator arteries, is recommended. In addition, the pelvic endofascia should be completely removed. Portions of the prostate and seminal vesicles, or the uterus, tubes, ovaries and part of the vagina, should be removed during the abdominal phase. In the perineal phase do a wide excision of the levatores ani at their origin, and complete removal of the fat in the ischio-rectal fossae. If the spread has been downward one may, at a second operation, dissect out the inguinal nodes.

Pelvic exenteration may also be done in this type particularly, or in any extensive carcinoma of the rectum. The disadvantage is a wet colostomy which is hard to control if the ureters are transplanted into the intestines, or if a cutaneous ureterostomy is performed. However, the latter two conditions could be obviated by making an isolated pouch of the cecum and ileum, transplanting the ureters into the cecum, thus making it a substitute bladder, and bringing out the ileum on the abdominal wall. If the ileo-cecal valve is competent the patient remains dry and can be catheterized through the ileum when necessary. The possibility of hyperchloremic acidosis must be considered. Again, a pelvic eviscerectomy is not indicated in carcinoma of the rectum as frequently as in carcinoma of the uterus because from 27 to 37 per cent (Grinnell[17] Sunderland[32A]) are apt to have venous involvement, and consequently metastasize to the liver. The area between 8 cm. and 12 cm. from the anal margin has been the bone of contention as to whether preservation of the sphincter allowed sufficiently wide resection so as not to decrease the number of five-year survivals.

Lahey,[20] Jones[19] and Rankin,[27] Gilchrist and David[41, 15] have felt that it was not feasible. On the other hand, Dixon,[10] Wangensteen,[22] Best[6] and others have felt that anterior resection, using a minimum margin of 3 cm. distal to the lesion, yields favorable results. We feel that anything below 15 cm. from the anal margin, below the peritoneal reflexion, should have an abdomino-perineal resection.

Garlock and Ginsberg,[11] in anterior resection, report a recurrence rate of lesion within 7.5 to 10 cms. of 27.3 per cent (in the suture line), and in the pelvis, 10.25 per cent,—a total of 37.8 per cent. In the 10 to 12.5 cm. level, 41 per cent recurred at the suture line and 12 per cent in the pelvis. Above this level the recurrence rate was 10 per cent. In their cases, as in our cases, the lesions were small and apparently ideal for anterior resection and anastomosis.

Anterior resection and immediate anastomosis may be done if the patient refuses colostomy or has a minimum of local involvement but definite hepatic metastasis.

Anterior resection without removing the rectal stump, and either suturing it or passing a drain down through it, may be used in bad risks where the lower 6 cm. are not involved in the resection, or where the possibility of anastomosis at a later date may be considered if no recurrence

occurs.

Goligher[16] in an attempt to explain 15 unexpected recurrences in the colon and rectum, more particularly the rectum, and especially where anterior resection with preservation of the sphincter has been done, has advanced a very remarkable theory and a method of prevention. In 15 unexpected recurrences the growth was early and adequately removed (6 had no lymphatic involvement, 2 only rectal wall involved). He suggests that the recurrence is due to loose viable cancer cells in the lumen of the rectum mixed with feces. Their number in the lumen may be increased by enemas, handling and manipulation of the growth. In support of his hypothesis he calls attention to the frequency of recurrence in anterior resection where the stump is left in, in cases where recurrence occurs in the abdominal wall and in one case recurrence in the sphincter which was incised to give better drainage of the stump.

The viable cancer cells become engrafted on a raw surface and grow. The cells are usually displaced downward because of the fecal stream. It is rare to have the cells travel against the latter. In support of this is the report of 2,000 cases of excision of the rectum in which only 3 instances of recurrence at the colostomy was seen. Cell implantation may take place anywhere in malignancy—as in the stomach, colon, breast, etc. The recurrence may be due to spillage of cells, transference by fingers, or particularly in the suture line by being carried into the wall on the needle.

In order to prevent implantation in cancer of the rectum in those types of operation when the bowel is opened distally, a clamp is applied two inches below the growth. The patient should be in the Trendlenberg position and a proctoscope passed. The rectum below is irrigated with a solution toxic to cancer cells such as perchloride (Goligher)[16] or solution of iodine (Cole).[9] This procedure kills the cancer cells. The rectum is then sectioned below the clamp.

Unfortunately, one cannot lavage the distal loops at higher levels in the colon, but the danger of implantation may be less here because of the fecal stream, and the storage of feces is less. The mucosa and cut edge are swabbed with an antiseptic prior to anastomosis.

Although colloid carcinoma represents 20 per cent of rectal carcinoma, are low grade histologically and do not metastasize early, the results are very unsatisfactory and five-year survivals are few. Posterior resection, with or without colostomy, may be used occasionally in the very poor risks.

Resectability varies from 45.5 per cent in various series, to 96 per cent as reported by Allen.[1] Various series give various results (Lahey[20] in 1945 reports a resectability of 83.5 per cent; Hayden[18] reports 83 per cent in carcinoma of the rectum; Bacon[2, 3] 81.5 per cent; Garlock and Klein[12] 66.7 per cent on ward cases and 81.5 per cent on private cases). Probably 75 per cent of the cases today are resectable in most large series. The mortality rate is under 5 per cent and in some cases, such as Jones' series, it has been zero. Five-year survival rate is about 50 per cent on the average. Gilchrist and David[13, 15] report 57 per cent of cancer of the colon that had no lymph node involvement, 37.5 per cent lived for five years.

Prognosis in those cases of the right side of the colon that are resectable is much better, because of the widespread resection, and the fact that the flat ulcerating, fungus-like growths do not metastasize as readily. Person and O'Neill[25] reported 68 per cent survival without lymph node involvement, and 28 per cent where lymph nodes and contiguous structures are involved.

Postoperative Treatment Morphine is given every four hours, p.r.n., usually for the first 48 hours. Shock is infrequent because of better preparation

preoperatively. Having restored the normal blood volume before operation, not so much blood is needed postoperatively. Water and electrolyte balance is maintained, but no saline solution is given for the first 48 hours unless specially indicated.

We may have oliguria the first 24 hours, but after that we prefer to have a urinary output of 1,500 cc. in 24 hours, although 800 c.c. is sufficient. Continuous suction is used with an indwelling Levine tube for 24 to 48 hours, unless one has a preliminary colostomy. All fluids lost by suction, ileostomy or colostomy are replaced by intravenous infusions of normal saline or ½ normal or with 1/3, volume for volume, as clear fluids are allowed as soon as peristalsis is established. Crystacillin 300,000 units every 8 hours, and 500 mg. of streptomycin are given every 6 hours. Or, terramycin may be given, 1 gm. intravenously b.i.d., or aureomycin 500 mg. every 6 hours intravenously. Blood may be given when necessary. Of course, blood is given during the operation to replace that which is lost. During the procedure, where the possibility of hypopotassemia exists, accurate potassium studies may be made by means of the flame photometer. Depletion of potassium may exist because of a diminished intake prior to operation as a result of vomiting or intestinal obstruction, following surgical procedure, or an increase output because of vomiting, diarrhea, intestinal fistula and continuous concomitant suction. Administration of glucose and water, or glucose and saline, in those cases where dehydration and malnutrition have not been corrected preoperatively, may cause hypopotassemia. This may be noted by the symptoms such as languor, distention, loss of strength and energy, tachycardia and changes in the E.K.G. Potassium may be given in the intravenous solution provided one has an adequate urinary output and the potassium is given at a rate of not more than 20 millie equivalent per hour.

Early ambulation is practiced. Coller[32] et al. believes the transverse incision is advisable, for both early ambulation and transverse incision allow for deeper breathing, coughing and bed exercise. The incidence of wound dehisence or separation is definitely lower in the transverse incision. Early ambulation and specific leg exercise, according to Leithauser,[22] have prevented postoperative embolic complications. However, such has not been our own experience. Early ambulation has definitely improved the morale of the patient, improves his muscular and vascular tone, increases the expansion of his lungs, lessens the tendency to atelectasis, distention and urinary retention. The problem of postoperative embolism is a very pertinent one as this condition is very apt to occur in the aged, debilitated, those with hypertrophy of the prostate and particularly in malignancy. We are particularly cautious about these individuals. Cases with evidence of marked varicosities of lower extremities should be bandaged with elastic bandages (such as the Ace bandage) before going to the operating room. Careful examination of the lower extremities, inspection, palpation and use of Homan sign, should be done daily. There is no way of predicting a possibility of thrombophlebitis or phlebothrombosis. We believe either may be guilty of causing pulmonary embolism. The only test we know that may help us in the prediction of thrombosis is a rise in white blood count and a lowered prothrombin time. A white blood count, platelet count and prothrombin time, is done routinely pre- and postoperatively. If on the latter examination an increase in the white blood count and platelets is found, and more particularly if the prothrombin time is definitely decreased, heparin is administered for at least 48 hours to keep the coagulation time at 15 minutes or more. Dicoumarol is given at the same time the heparin is started. Where the possibility of thrombophlebitis exists, Dicoumarol 300 mgs. at

the same time is given, repeated as often as necessary to keep the prothrombin time 10 to 30 per cent of normal (10.30 seconds) preferably the latter, the prothrombin time being determined before—and then daily, after administration.

Postoperative Treatment In postoperative care very frequently one has to insert his finger along the drainage area in the peritoneum so that it may drain freely. However, after the third or fourth day one may inject a solution of varidase (that is a combination of streptodornase and streptokinase) which will quickly clear up the drainage. Another point to remember is that sometimes when one repairs or makes a new pelvic floor of peritoneum one may cause marked deviation of the ureters which may even cause obstructive phenomena of the kidneys.

Postoperative Pain Perineal pain, sacro-iliac pain and sacro-coccygeal pain may occur from six months to two years postoperatively. There may be a loss of sexual potency and bladder symptoms. Perineal pain usually means recurrence of malignancy. The results of direct attack with excision of the perineal tissues or presacral neurectomy are poor. Narcotics relieve them best of all. Regional nerve block gives temporary relief. Chordotomy is satisfactory. However, loss of potency and possible loss of bladder control (Beal et al[4]) may occur, particularly in those cases below the peritoneal reflexion.

Gagensteen's[35] second look may have great value, but the number of cases done have been insufficient to draw valid conclusions.

Conclusions

Wider excision of cancer of the colon, particularly the left half and the rectum, is advocated. Resectability rate is higher and mortality rate lower and five-year survivals greater in the last ten years. Better preparation of the patient, due to the understanding of changes in the blood volume and metabolism, plus better anesthesia and the use of antibiotics, have been responsible for this improvement. Early diagnosis, a goal to be hoped for, unfortunately, has fallen short of expectations.

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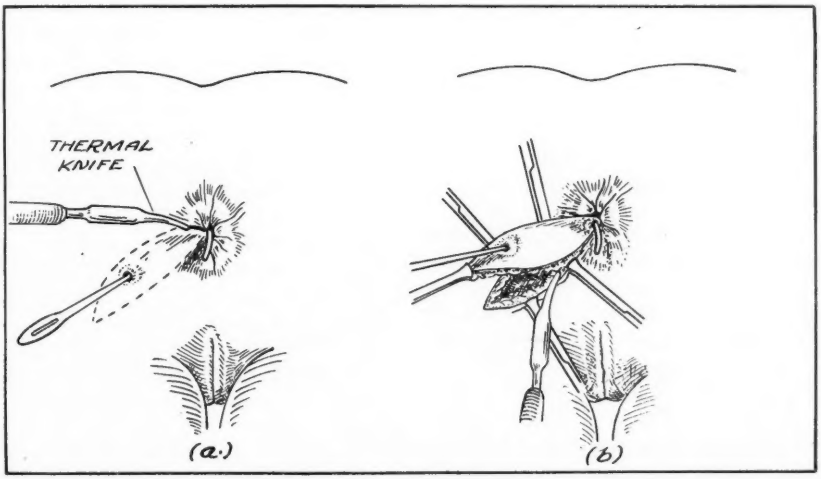
Corrigendum

The statement on page 117, June issue, (Part 1) "usually we give one gram of neomycin sulphate every four hours for four doses, and then one gram every four hours until about nine grams are given," should read "usually we give one gram of neomycin sulphate every hour for four doses, and then one gram every four hours until about nine grams are given."

Clini-Clipping



Thermal knife dissection of fistula. (a.) Proposed lines of excision. (b.) Demonstrating Allis clamps on margins of wound to hold tissue taut while cutting. Note back cut of external opening and complete excision of crypt area internally.

Physical Medicine in Proctology

"For this the great error of our day in the treatment of the human body, that the physician separates the soul from the body." Plato Dialogues, 380 B.C.

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In this era of specialization doctors are confronted with the great pressure of time in keeping abreast of medical progress within their own specialty. The necessity for consultations with other specialists is recognized more and more in order to afford the patients the maximum benefits of the vastly increasing knowledge of therapeutic procedures.

Physical Medicine, even though one of the oldest specialties in medicine, did not receive full recognition until the advent of World War II.

For the proctologists, physical medicine may serve as an adjunct in the management of certain rectal ailments, and in post-operative cases rehabilitation may be just as beneficial as in other major post-surgical cases.

Physical medicine utilizes physical agents, such as light, heat, water, electricity, together with exercises, massage, occupational therapy and vocational training. The patient who is bed ridden week after week needs more than sedatives and changing of dressings. The inactive mind conspires against the healing of the wounds and hastens atrophy of ambition. This eventually will terminate in psychoneurotic manifestation, and the end result —a chronically ill patient. If the patient has compensation or insurance benefits which serve as a crutch, the desire or the will to get better or return to work is lessened through the weeks of inactivity. Therefore, bed inactivity, both mental and physical, should be limited to the acute phase only. Graduated exercises, such as flexion and extension of the upper and lower extremities, quadriceps setting, breathing exercises, abdominal exercises, will lessen the incidence of thrombosis and phlebitis.

Exercises will aid in the well-being of the patient by supplying the needed nourishments to the muscles and helping in eliminating waste products. Increased blood and lymph circulation with muscular activities will maintain muscle tonus and will prevent atrophy of disuse and deformities.

Bed posture is just as important as standing or sitting posture in post-operative cases. Good bed posture adds to the comfort of the patient by equally distributing the stress and strain to the body. After all, the patient is already subjected to mental and nervous strain. Why add physical strain?

Lying in bed over a period of time will rob the patient of the influence of gravity

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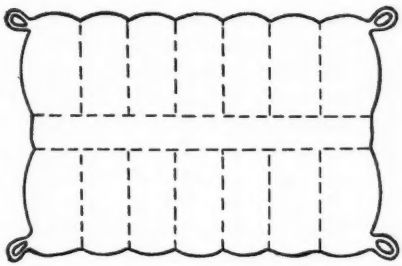
and standing balance. Hence, early sitting balance in bed and on the side of the bed with feet resting on a stool will help the patient on resuming ambulation. Wheel chair and early standing, supported at the foot of the bed, then walking with support and comfortable, laced shoes, contribute greatly to the patient's strength and confidence. He must not worry about his future economical life, constant thoughts of losing his job, or not being able to compete with his fellow workers in the arena of competitive enterprise.

There are certain conditions in proctology which may be benefited by physical medicine, namely: anal spasm, uncomplicated anal fissures, pruritus ani, hemorrhoids in the acute inflammatory phase, coccygeal pain, constipation and spastic colitis. It seems that the functional disturbances of the colon and the anal rectal area is far more common than the organic, and many psychoneurotic individuals will project their avenue of escape mechanism through the lower channels of the body.

The organic rectal disturbances are often diagnosed through the complaints of low backaches, which is the béte noir of physical medicine. Every backache should have a thorough proctological examination by a specialist.

Physical medicine in any of its forms should be prescribed just as meticulously as any other therapeutic agents. Since hydrotherapy is one modality which the proctologists most often employ in preoperative, post-operative and palliative cases, the prescription for its administration should include, temperature in Fahrenheit, duration, (physical and mental condition of the patient), and precautions such as allergy to heat, heat intolerance and peripheral vascular pathology. Empirical measurement of the water temperature may lead to disaster, hence a bath thermometer, (which is usually a household article) should be used by the patient or the relative who prepares the bath.

Temperature Table for Hydrotherapy



Hydrocollator steam pack

Figure 1

Very cold	32-60 F.	Tepid	80-90 F.
Cold	60-70 F.	Neutral	92-98 F.
Cool	70-80 F.	Hot	98-104 F.
	Very Hot	104-120 F.	

After the patient is finished with his hydrotherapy, the parts are carefully dried and plain talc powder is sprayed on the regions where moisture or perspiration may accumulate. A rest period of 30 minutes to one hour helps the patient in relaxation. Patient should be kept warm, especially in the winter time, to avoid chilling of the body.

It would be timely at present to review very briefly the physiological effects of heat.[1]

I—On the nervous system;

a—Sudden application of heat stimulates the cutaneous nerve endings and centers, thus producing a brief excitement effect.

b—Application of moderate heat soothes the peripheral nerves and will relieve pain in the congested internal organs with which they are in reflex relation.

c—Very hot, brief application stimulates the vasoconstrictors in the skin and in the organ with which the area is in reflex relation.

d—Prolonged application of extensive heat prevents the heat regulat-

ing centers from regulating the accumulation of too much heat within the body and results in accumulation of tissue waste and diminished oxidation of the tissues.

II—On the heart and blood vessels.

a—Application of moderate amount of heat will slow the pulse, while gradually elevated and prolonged heat application will relax the muscle fibers of the heart and quicken the pulse.

b—Sudden, very hot applications will contract the cutaneous blood vessels and dilatation takes place with reaction.

Moderate heat application causes dilatation without preceding contraction. If the temperature is gradually elevated, then the capillaries of the skin become engorged.

d—General hot application if not properly applied may cause cerebral congestion. This may be prevented by correct application of cephalic cold.

III—On the blood pressure.

a—Warm bath will lower the blood pressure by dilating the surface vessels and inhibiting the vasomotor centers.

IV—On the blood.

a—General hot application will decrease the number of red and white corpuscles in the circulating blood, but local application will cause marked increase in the number of leukocytes in the blood of the part subjected to the application of heat. The red cells are decreased in number.

V—On the respiration.

a—General application of heat will increase the rate and ease of respiration.

VI—On the skin.

a—General application of heat will increase perspiration.

b—Very hot applications cause the skin to contract, and the skin becomes pale due to the primary excitant effects of heat upon the sensory and motor nerves of the skin.

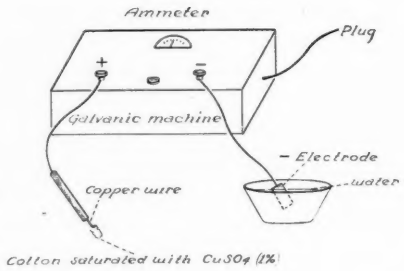


Figure 2

Secondary effects are temporary paralysis of the vasoconstrictor nerves, stimulation of the vasodilator nerves, relaxation of the involuntary muscle fibers in the arterial walls, relaxation of the elastic fibers and the skin muscles. Hyperemia follows, and the skin appears dusky red. Tactile sensibility is lessened.

One of the most commonly employed hydrotherapeutic measures in proctology is the sitz bath, which is the application of water at varying temperatures and durations to the lower portion of the body, excluding the feet and legs. It may be given in various forms of commercial tubs, or it may be given at home in the bath tub. If it is in a bath tub then the patient is instructed to keep the knees and feet out of the water which covers him up to the umbilicus. In prescribing hot sitz bath, the temperature of the water should start at 98 degrees F. then add hot water gradually until the desired temperature is reached.

Hot moist compresses; Occasionally moist heat has to be applied to the perineum when sitz bath is not available. The most practical moist compress or pack at present is one manufactured by the Chattanooga Pharmacal Company, which is filled by a gel filler and maintains moisture and temperature for about thirty min-

utes during one application. It is inexpensive and easily applied.

Occasionally, the proctologist will use ionization. In giving ionization fresh solution of the chemicals should be made at the time of application. The solution for copper ionization is copper sulphate, 1% strength, given through the positive pole because copper is the positive ion. Zinc sulphate or chloride is also employed in 1% solution, given through the positive pole. The negative pole (or the inactive electrode) is placed under the lumbar area of the patient. Time duration is ten minutes, milliamperage from 1-5 milliamperes.

Electrodessication, fulguration and electrocoagulation: Caution and knowledge of the modalities employed in electric surgery are important. Dr. Alfred J. Cantor[2] wisely admonishes his fellow surgeon in stating, "The proper application of electrosurgical techniques to proctologic surgery requires a full understanding of the modalities involved."

Electrodessication: Mainly used to destroy small growths. The current employed is from the monoterminal unit of the machine. Minimum amount of current should be applied.

Electrocoagulation: Mainly used in destroying malignant tissues because it is more intensive in its destructive power. In electrocoagulation two terminals are employed, one is the active and the other one is the inactive (which is placed under the patient's back). The electrode should be smooth and moistened with a little soap suds or K-Y Jelly. Turn the connecting clip under the edge of the electrode in order to avoid contact with the body which may result in a burn.

Fulguration: Mainly used in destroying superficial growths. A needle or a small metallic ball or loop is inserted in a plastic handle, which in turn is connected to a monoterminal unit. An electric arc is emitted from the electrode to the body or surface to be fulgurated.

To achieve the greatest degree of success in electrosurgery one should practice it on a piece of meat in order to ascertain the amount of surface or depth destruction. Of course the machine should be approved by the Council on Physical Medicine and Rehabilitation.

Short wave therapy or the commonly designated diathermy, is used for the production of heat in the tissues, thereby causing increased temperature and vasodilatation. One must rely upon the patient's tolerance because there is no way of measuring adequate dosage. Consequently indications and contraindications should be kept in mind while administering short wave therapy.

Pads and inductotherm cables are the most practical means of applying heat in proctology. In using the cable. ½ inch padding of turkish toweling is placed on the perenium, and a small pancake figure of the cable is placed over the towel. Spacers are inserted in between the coil to avoid contact with each other.

Indication for short wave therapy: Wherever heat is required for therapeutic purposes.

Contraindication:
a—Hight Fever
b—Heat sensitivity

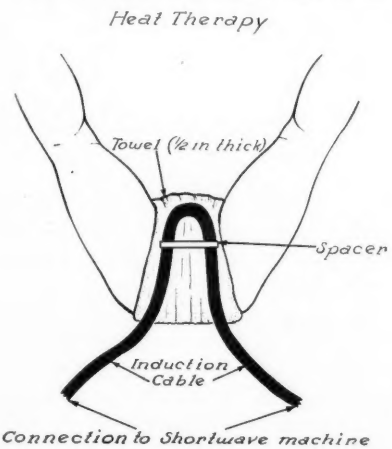


Figure 3

c—Hemorrhage
d—Malignancy
e—Menstruation
f—Pregnancy, last trimester
g—Non-draining infection
h—Regions of anesthesia
i—Purpura
j—Hemophilia
k—Wet dressing
l—Adhesive plasters
m—Peripheral vascular disease

The following precautions should be observed while short wave is given:

1—Machine or patient should not be left alone during treatment.

2—No steam pipe or water pipe near the treatment table.

3—Treatments not to be given on metal tables or springs.

4—Parts to be completely exposed and no metal in the field of treatment.

5—Commence treatments with ten minute period. Subsequently it may be increased to fifteen minutes and then to thirty.

6—Always observe the skin area carefully before treatments, and make notation of erythema.

7—Avoid regions of burns and scars.

8—The patient should not touch the machine during treatment.

9—After treatment inspect the skin, and allow the patient to rest for 15 minutes to avoid chilling.

Summary

1. Physical Medicine is a valuable adjunct in the management of certain proctologic conditions.

2. In post-operative cases, where the patient had extensive surgical procedures, rehabilitation of the patient is of paramount importance.

3. Physical Medicine has to be prescribed just as meticulously as any other medication.

4. In using electricity in the treatments of proctologic conditions, the operator should familiarize himself with the different technics.

5. Observe indications, contraindications and precautions with short wave therapy.

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The International Academy of Proctology announces the renewal of a postgraduate teaching fund to provide gift subscriptions to THE AMERICAN JOURNAL OF PROCTOLOGY to 900 of the largest Hospital Libraries in this country and abroad. THE AMERICAN JOURNAL OF PROCTOLOGY, as the only official Proctologic Journal in the world, will thus provide a continuing postgraduate course for interns, residents and hospital attending staffs in major hospitals.

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Surgical Viewpoint in Ulcerative Colitis

WILLIAM A. SHAVER, M.D.
L. KRAEER FERGUSON, M.D.*

With the stress and strain of modern living there has appeared a group of disease entities which seem to arise as a consequence. These diseases probably begin due to a piling up of psychic trauma leading to an imbalance of nervous activity in the autonomic and sympathetic nervous systems, and perhaps also a disturbance of the normal interrelationships of the endocrine glands. The basic physiology leading to these disturbances is as yet not clear, but the resulting diseases are well recognized as clinical entities.

The gastrointestinal tract comes in for its share of these disturbances. Well recognized examples are peptic ulceration, regional enteritis, and idiopathic ulcerative colitis. It is readily understood that all patients suffering with these diseases are not candidates for surgical care. Most of them respond successfully to conservative treatment. There is a small group, however, that develop irreversible changes and complications. These demand surgical care, in some cases to save life, and in others to effect a rehabilitation and restore the patient to social and economic usefulness.

It is our purpose to discuss the surgical viewpoint with respect to one of these diseases—ulcerative colitis. This discussion is based on an experience with more than a hundred cases of this disease, 92 of which have been operated upon with an operative mortality in 219 operations of 3.20% and a case operative mortality of 7.60%.

The Surgical Viewpoint as to Indications for Operation in Ulcerative Colitis We believe that indications for surgery may be divided into two groups.

I. Indications for Emergency or Life-Saving Surgery
- Hemorrhage
- Obstruction
- Perforation
- Fulminating disease

II. Indications for Elective Surgery or Surgery for Rehabilitation
- Polyposis
- Granuloma
- Chronic Obstruction
- Carcinoma
- Fistulae
- Extracolic complications — Arthritis, iritis, etc.
- Intractability

It is apparent that these indications represent either life-threatening complications or complications due to irreversible changes brought about by prolonged disease.

Indications for Emergency or Life-Saving Surgery The patients who fall into this group are those having complications which threaten their lives. They are naturally poor risk patients, but the surgical viewpoint is that these patients are too sick *not* to be operated upon. The complications — hemorrhage, obstruction, and perforation—may occur singly, but

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very often in combination. The overwhelming toxemia of the acute fulminating colitis may occur before the above complications have time to develop. Any of these complications may appear in a patient with disease of relatively short duration, and because of the short duration and the poor condition of the patient there may be a tendency on the part of the practitioner to hold back from surgery in the hope that some fortunate turn of events would stay the inevitable. Nothing could be farther from the truth. Surgery offers the only chance of life and cure, and it should not be withheld until operation is almost an antemortem procedure.

In considering what should be done at operation in these cases, the surgical viewpoint has changed as experience with the surgical therapy has increased. Whereas in earlier days conservative operations such as fecal diversion by ileostomy was thought to be all that the patient could stand, it gradually became apparent that radical surgery, with rapid removal of the bleeding, perforated diseased colon was the only logical life-saving therapy. The patient could stand the radical surgery, but he could not live with his diseased colon.

This radical viewpoint was reached as a better understanding of the pathology of the disease was gained. The exsanguinating hemorrhage of colitis is a generalized oozing from the entire ulcerated colon. Anything less than removal of the bleeding colon is doomed to failure. The gas-filled atonic colon with acute obstruction often precedes or is associated with necrotic perforations of the bowel wall. Removal of the involved colon is the only treatment which can prevent fatal peritonitis. In the fulminating type of ulcerative colitis, removal of the acutely inflamed ulcerated colon is the best method of removing the absorbing surface producing the intense toxemia.

In our patients there were 17 cases that fell into the group operated upon as emergencies. They were classified as follows:

Acute hemorrhage	3 cases
Perforation and hemorrhage	2 cases
Perforation and acute obstruction	3 cases
Acute fulminating disease	9 cases
	17 cases

There were 4 post-operative deaths, all from peritonitis, two of these had thrombophlebitis with pulmonary infarcts in addition. When it is considered that most of these patients were almost surely doomed to a fatal outcome without operation, an operative case mortality of 23.5% is surely justifiable.

Indications for Elective Surgery or Surgery for Rehabilitation In Ulcerative Colitis With the passage of time, patients suffering with ulcerative colitis develop irreversible changes in the colon which preclude any hope of recovery of normal bowel function. In some cases the chronic inflammatory process leads to a fibrous thickening of the colon, so that the bowel is converted into a rigid contracted tube which transports the liquid contents of the ileum to the anus without change. The patient, in spite of adequate medical therapy, develops a chronic fluid, nutritional, vitamin, and electrolyte deficit. This combination, in addition to the anemia and weight loss, produce a weakened individual who must have from 10 to 30 bowel movements that occur both day and night. It is little wonder that these patients, who are not only physical but also social and economic cripples, should become psychiatric problems as well. These patients are classified as being intractable to medical therapy, and surgery offers an almost certain hope of complete rehabilitation.

As a further stage of the pathologic process, the fibrosis of the bowel wall may lead to stricture formation and chronic large bowel obstruction. In other cases granulomatous thickening of the bowel wall may occur in one or more areas pro-

ducing local constriction and areas of narrowing which are indistinguishable in the x-ray picture from carcinoma. In some cases, bits of mucosa may be left between the ulcerated areas producing pseudopolyposis and even true polyposis. These colons never return to their normal state, and there is the ever-present danger of carcinomatous degeneration.

It is an accepted fact that carcinoma occurs more frequently in the bowel of patients with ulcerative colitis than in the general population. It occurs most often in patients whose colitis has been of some years duration and in patients of midlife and beyond. The tumor is a highly malignant one, often not recognized early because the symptoms of pure colitis and carcinomatous degeneration in colitis are so much the same. For these reasons the prognosis of carcinoma in ulcerative colitis is much poorer than for carcinoma developing in the normal bowel. Chronic perforation with the development of walled off abscesses or fistulae are not infrequent in long-standing colitis. Conservative therapy in these cases is bound to fail.

In long-standing colitis, which may not be so severe as to be totally incapacitating, chronic absorption from the diseased colon may lead to extra-abdominal changes, the most common of which are arthritis and iritis. Removal of the source of toxic absorption is the only method of relief.

In our group of patients in which operation was carried out as an elective procedure for rehabilitation, there were 75 cases. In this group of intractable cases

12 had chronic bowel obstruction
2 had granulomata
18 had polyposis
20 had various types of anal and internal fistulae. In 4 of these the fistula was the presenting symptom
12 had arthritis. In 4 of these the arthritis was the presenting symptom
15 had carcinoma
26 had chronic bleeding from the bowel

Viewpoint as to Preparation for Operation in the Patient with Ulcerative Colitis There is no group of patients in whom the preparation for operation must be more careful or more meticulous. The problems of fluid and electrolyte balance are relatively easily solved, but in addition it is necessary to overcome vitamin, protein, and blood deficitis in order to get the patient in maximum shape for extensive operations, and less for secondary operations, when, because of previous surgery, the patient is in relatively good nutritional balance.

Since the use of corticotropin or cortisone therapy has been suggested for ulcerative colitis, we are now seeing patients who come to surgery after the use of these drugs. These drugs suppress inflammatory reaction, and retard the healing process. Tulin, Kern, and Almy report 3 cases in 17 treated with corticotropin who developed perforation of the bowel and peritonitis during such therapy. In one of these abscess formation proceeded without the usual signs and symptoms of localized peritonitis.

We have been impressed by the friability of the colon when operation has been performed after ACTH therapy. In one such instance the bowel practically fell apart as a colectomy was being performed, and in another the colon showed multiple perforations and generalized peritonitis. He was one of our operative deaths.

From the surgical point of view there is a marked hazard in the use of corticotropin and cortisone in patients who are to be subjected to surgery for ulcerative colitis, and they may precipitate perforation and peritonitis even in those for whom surgery is not immediately considered.

Viewpoint as to Operation to be Performed for Ulcerative Colitis The surgical viewpoint in the treatment of ulcerative colitis has changed considerably in the past

decade. Earlier it was thought that the chief indication was to divert the fecal stream from the diseased bowel. The diversion was made at the most distal portion of the normal intestine. Thus ileostomy was performed for total colitis. It was done with the hope that recovery of the bowel would take place by placing the diseased colon at rest. It is now well accepted, I believe, that the colitis bowel rarely if ever recovers sufficiently to function normally. It not only does not recover, but it continues to bleed, perforates, is a source of absorption producing arthritis, dermatitis, iritis, etc, and in long-standing cases develops carcinoma. For these various reasons, the surgical viewpoint has changed to one of fecal diversion and removal of the diseased bowel at the original operation, or at later staged procedures. This means multiple major operations are necessary to rehabilitate these patients. An analysis of our cases, including those performed for operative complications indicates the following.

31 patients had one operation
22 patients had two operations
19 patients had three operations
7 patients had four operations
6 patients had five operations
4 patients had six operations
3 patients had seven operations

There is some controversy as to where the fecal diversion should be performed. We believe that the diversion should exclude the diseased bowel, but this does not mean an ileostomy in every case. In distal colitis it is often possible to perform a transverse colostomy and avoid the necessity of wearing a bag. This may not always succeed, and if it fails, an end ileostomy and resection of the right colon can be performed. In 13 cases in which this plan of therapy was employed, ileostomy was necessary in 2. Two cases are doing only fairly well with their colostomies, but nine patients are doing well.

In some cases an abdominal stoma may be avoided if the distal colon is not involved in the disease process. The normal intestine proximal to the diseased area may be anastomosed to the distal normal bowel. In eleven cases we have performed the anastomosis as a primary procedure with or without resection of the diseased bowel. When the diseased bowel was not removed at the primary procedure, the ends of the gut were implanted in the abdominal wall as mucous fistulae, and the involved colon removed at a later stage.

In four cases after a primary ileostomy or colostomy, it was possible to take down the stoma and anastomose to normal distal colon. The anastomosis performed in the fifteen cases are as follows.

Ileotransverse colostomy	4
Ileosigmoidostomy	9
Ascending colon to rectum	1
Ascending colon to descending colon	1

In all cases in which an anastomosis was performed, excellent function was obtained. In one case a re-resection and anastomosis was performed because of stenosis at the site of anastomosis.

In speaking of operations to be performed, there arises the problem of the treatment of anal fistulae and perineal abscess so frequently encountered in ulcerative colitis. It has been our experience that these lesions rarely heal as long as the colitis is active, and they heal promptly as soon as fecal diversion is accomplished. Thus the anal and perineal complications of the disease may become an indication for major surgical therapy of the disease.

Finally, it should be mentioned that all abdominal stomas should be made with an end of the gut. Loop ileostomy or loop colostomy have invariably proved unsatisfactory.

Viewpoint as to Who Should Operate on Patients with Ulcerative Colitis

Patients who come to surgery for ulcerative colitis are extremely poor risk patients, and they are prone to develop many types of complications. In the operative

and post-operative care of these patients, experience adds much to the success of the treatment. Surgeons who have had little experience with the disease, those who see only an occasional patient, and hospitals where almost constant competent resident and intern service is not available, should not attempt to care for these patients. There is no group of patients who require such close and expert care as do those with ulcerative colitis.

In the operative care, experience adds to the judgment of the surgeon in determining the extent of the operation. He must always be prepared to stop if the patient's condition does not warrant further surgery. Experience is most important in the placement and formation of the ileostomy or colostomy stoma. It must be properly placed and properly formed if a bag is to be worn successfully. The abdominal opening—if too large—will permit prolapse, and if too small may cause obstruction. Even with experience, stomal complications are not uncommon.

Complications of Operations for Ulcerative Colitis

Complications of Ileostomy	
Revision of loop ileostomy	2
Revision for Stenosis	15
Revision for retraction	4
Revision for prolapse	8
Revision of colostomy	1
	—
	30

In the immediate post-operative care these patients are problems of fluid and electrolyte balance so that almost daily blood chemical determinations are necessary to prevent overloading or deficits. Intestinal obstruction is a common complication which may develop any time during the post-operative period. Most of these can be overcome by intestinal intubation, but operative correction may be necessary. Secondary intraperitoneal abscess, usually arising from the retained bowel, may need surgical drainage. Urinary and vascular complications, especially phlebitis, are so frequent as to be almost usual. Wound complications not infrequently occur—especially when previous multiple operations make it necessary to operate through a previous wound scar.

Complications of Operations Demanding Operative Treatment

Vein ligation for phlebitis	3
Inf. vena cava ligation	1
Wound complications	
Abscess	4
Dehiscence	3
Repair of incisional hernia	1
	—
	12

Intra-abdominal Complications

Secondary abscess, drained	3
Intestinal obstruction	6
Subdiaphragmatic abscess	1
Peritonitis drained	1
Small bowel hemorrhage	
Resection segmental	1
	—
	12

Anal and Perineal Complications

Incision and drainage of perirectal abscess	3
Excision of anal fistulae	2
	—
	5

All of these complications, either of the operation or of the disease, demand for their successful treatment so much in experienced and competent care that the patient's interests are best served if they are treated in a fully staffed hospital by men especially interested and trained in handling ulcerative colitis patients.

Viewpoint as to Results That Can Be Achieved by Surgery in Ulcerative Colitis If surgery is to have a place in the treatment of ulcerative colitis, it must justify its use by reasonable operative mortality and by favorable end results. We have had 7 operative deaths in 219 surgical procedures performed on 92 patients. That the operations were of

some magnitude may be seen by the following survey of the 160 surgical procedures performed for the ulcerative colitis as a disease. (The other 59 operations in the 219 were performed for complications.)

Operations for Ulcerative Colitis

Ileostomy only	31	3 deaths
Ileostomy, right colectomy	5	
Ileostomy, left colectomy	1	
Ileostomy, sub-total colectomy	31	3 deaths
Ileostomy, total colectomy	1	
Right colectomy	6	
Left colectomy	1	
Transverse colectomy	1	
Sub-total colectomy	22	
Total colectomy	1	
Resection of sigmoid and rectum	24	
Ascending colostomy	5	
Ascending colostomy, Transverse colectomy	1	
Transverse colostomy, Resection left colon and rectum	5	
Descending colostomy	1	
Ileosigmoidostomy	5	
Ileosigmoidostomy, left colectomy	2	
Ileosigmoidostomy, Sub-total colectomy	5	
Ileotransverse colostomy	1	
Ileotransverse colostomy, right colectomy	3	
Anastomosis ascending colon to rectum, resection of remaining colon	2	
Closure of colostomy	2	
Closure ileostomy	1	
Vagotomy	1	
Laparotomy—perforated CA rectum	1	1 death
	160	

Of the seven deaths, three occurred in patient with acute fulminating colitis treated by ileostomy and sub-total colectomy in two cases and ileostomy only in one case. The causes of death were peritonitis, pulmonary infarct, and secondary abscess with vena cava thrombosis. One patient with perforation and peritonitis at the time of operation died of peritonitis following ileostomy and sub-total colectomy. There were two deaths early in the series, one from peritonitis due to perforation of an ileostomy by a drainage tube, and another from obstruction following ileostomy alone. A final death occurred in a 74 year old man from peritonitis due to perforation of a carcinoma arising from the retained rectal segment in long-standing colitis. The operative mortality does not appear prohibitive for the surgery that is necessary for ulcerative colitis.

Since operation, four patients have died, two of recurrent carcinoma arising originally in a colitis bowel. One patient committed suicide, and one patient became a psychopathic problem and refused to eat. There remain of the original 92 patients those 81 who are living and from whom we can judge the results of surgical therapy.

Present Condition of Living 81 Patients

28 have had all of the colon and rectum removed
26 have only the rectum remaining
15 have all diseased bowel removed and an anastomosis
5 have colostomy with all distal diseased bowel removed
2 have colostomy with colectomy but rectal segment remaining
1 has colostomy only
2 have ileostomy only
1 has ileostomy and right colectomy
1 has had a vagotomy only

One of the results of operation has been a marked gain in weight, which has averaged 36.6 pounds. The patients thus return to a normal nutritional state. They need not adhere to any diet.

The patients are completely rehabilitated economically and socially. They are changed from dependent, insecure patients often requiring psychiatric care, into cheerful, self-assured individuals able to

take their place in the social and economic life of the community. The burden of wearing an ileostomy bag has been gladly exchanged for a chance to live and be active again. All have returned to active life in some form or other.

10 in school or college
23 housewives
4 secretaries
2 bartenders
2 maids
3 laborers
2 business men
4 working type unknown
1 school teacher
1 chemist
1 road supervisor
1 storekeeper
1 social worker
1 doctor
1 internal revenue inspector
1 beautician
1 bank clerk
1 research worker

This list is incomplete but is given to indicate that these patients are socially acceptable in a broad spectrum of activities. As a further indication of social acceptability, it might be stated that there have been no divorces in the patients operated upon. Four females and two males with ileostomies have been married. Three men have been fathers and two of the females have been mothers.

Conclusion

Surgery is life saving for the patient with acute life-threatening colitis and offers complete rehabilitation to the patient with disabling chronic colitis. Surgical therapy requires removal of all or most of the diseased bowel. In some instances internal anastomosis may be performed, but most often an abdominal intestinal or colonic stoma is necessary. The surgery, although extensive, can be performed with a relatively low mortality in good hands. This type of surgery should not be performed by inexperienced or untrained surgeons, or in hospitals without adequate facilities to give the care these patients require.

Complete nutritional, social, and economic recovery may be expected following successful surgery in patients with ulcerative colitis.

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Course in Postgraduate Gastroenterology

The National Gastroenterological Association announces that its Sixth Annual Course in Postgraduate Gastroenterology will be given at The Shoreham in Washington, D. C. on 28, 29, 30 October 1954.

The course will again be under the direction of co-chairmanship of Dr. Owen H. Wangensteen, Professor of Surgery of the University of Minnesota Medical School, who will serve as surgical co-ordinator and Dr. I. Snapper, Director of Medical Education, Beth-el Hospital, Brooklyn, N. Y., who will serve as medical co-ordinator.

Drs. Wangensteen and Snapper will be assisted by a distinguished faculty selected from the medical schools and Walter Reed Army Hospital, whose presentations will cover all phases of gastrointestinal diseases and problems.

The entire session on Friday, 30 October 1954 will be given at the Walter Reed Army Hospital.

For further information and enrollment write to the National Gastroenterological Association, Department GSJ, 33 West 60th Street, New York 23, N. Y.

Management of Diabetes Before, During, and After Anorectal and Colon Surgery

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The diabetic patient today faces surgery with as great a chance of surviving the operation and of having as successful a result as the non-diabetic patient. This new outlook for the diabetic is an outgrowth of better medical management along with more effective surgical intervention, including improved anesthesia, improved fluid and electrolyte therapy, and improved chemotherapy.

After the surgical problem has been appraised in the diabetic patient, and a decision made that surgery is necessary, the next important step is the control of the diabetes. When surgery is an emergency procedure, the following principles may be followed with regards to evaluating the diabetic status:

1. Freedom from ketosis—Do not delay surgery.

2. Presence of 2 to 3 plus acetone reaction with CO_2 of 40 to 50 per cent—Delay surgery for about 2 hours; meanwhile administer 10 per cent invert sugar with electrolytes intravenously, and sufficient insulin for coverage.

3. Presence of 2 to 4 plus acetone reaction with CO_2 of 35 per cent or below—Delay surgery for from 4 to 5 hours; meanwhile administer 10 per cent invert sugar with electrolytes intravenously, and liberal amounts of insulin.

4. Presence of diabetic coma—Immediate surgery is contraindicated, except for such measures as will avoid immediate disaster.

Vitamins B and C should be added to all intravenous solutions.

Elective surgery affords time to secure good diabetic control, and it is advisable to hospitalize the patient a few days before surgery in order to (1) build-up the glycogen reserves in the liver which are imperative for surgery, (2) to render the urine free from acetone and sugar, and (3) to build-up blood or protein deficits. The uncontrolled diabetic presents a serious problem for surgery for the following reasons: (a) negative nitrogen balance, due to increased protein catabolism causes complications; (b) edema may develop as a result of hypoproteinemia; (c) azotemia may develop as a result of renal failure; and (d) dehydration and electrolyte imbalance will seriously interfere with anesthesia and complicate the postoperative course.

Since elective surgery permits time for proper preparation of the diabetic, and since nutrition in the diabetic requiring

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surgery includes vitamins, proteins, water, electrolytes, and carbohydrates, the following substances should be administered to the patient along with the control of the diabetes:

1. Thiamin, which is essential to the utilization of carbohydrates. Thiamin deficiencies cause anorexia, irritability, fatigue, neurotic pain, and can develop within 4 to 5 days when the only nutrient material administered is intravenous carbohydrates.

2. Riboflavin, which is required for oxidative processes of metabolism, and having a close relationship to protein metabolism and repair. Deficiency causes delay in wound healing.

3. Nicotinic acid, which is needed in carbohydrate and protein metabolism. Nicotinic acid is retained in the body in increased amounts when protein is utilized to overcome a deficit of protein, or when protein is used for repair. Embarrassment of these mechanisms exist long before symptoms of nervousness, mental depression, anorexia, redness of tongue, ulceration of gums, or diarrhea develop.

4. Pantothenic Acid, which is necessary as a coenzyme in enzymatic acetylation, and is bound-up in the protein structure of the body. Experimentally, pantothenic acid deficiency may develop and lead to adrenal cortical exhaustion.

5. Pyrodoxine, which is needed for protein metabolism. It is involved in normal antibody production and in decarboxylating and deaminating various amino acid reactions, and has some neutral fat-sparing action.

6. Folic Acid, a hematopoietic and leukopoietic agent, which serves to restore and maintain total red blood cell mass and the development of leucocytes.

7. B_{12}, the antianemic substance of the liver, which functions in transmethylation processes and in facilitating marginal intakes of protein.

8. Ascorbic Acid, which is necessary for proper formation of all substances having collagen as their base. Its absence prevents the formation of matrices of white fibrous tissues, bone, cartilage, and dentine.

9. Vitamin K, which is needed by the chronically ill patient to prevent bleeding.

10. Proteins, which are necessary for formation of hormones, enzymes, and antibodies, and for the repair of damaged tissue. Repair of damaged tissue necessitates the activity of amino acids which are drawn from the amino acid pool. In man, the protein "turnover" involves the breakdown and resynthesis of 80 to 100 gm. of tissue protein per day. The plasma proteins are completely replaced every 15 days.

Low serum protein levels will interfere with proper healing and will affect the osmotic pressure of the blood, causing edema. Depletion of body proteins leads to prolonged convalescence, poor wound healing, increased complications following surgery, increased susceptibility to infection, lowered resistance to disease, anemia, hypoproteinemia, edema, reduction in enzyme activity, decreased gastric motility, muscular weakness, fatigueability, asthenia, and markedly decreased tolerance to blood loss.

Hypoproteinemia may develop in many surgical and medical diseases. The diabetic under proper control should not be in negative nitrogen balance. Treatment of acute hypoproteinemia includes administration of blood, blood plasma, or albumin. In chronic hypoproteinemia due to decreased and defective formation and utilization, plasma is of particular value, as in severe chronic hypoproteinemia associated with the nephrotic syndrome and chronic glomerulonephritis. Postoperative hypoproteinemia is readily benefited by plasma therapy.

Because large amounts of plasma are needed, 1500 to 3000 cc., and because plasma is expensive, it should be used only to correct the immediate hypoproteinemia. Thereafter, oral or parenteral amino

I. Preoperative Diabetic Management for Colon Surgery

A. DIET

1. Five days before day of surgery start low residue diet supplying the following:
   Carbohydrates, 200 to 400 gm., average 250 gm.
   Proteins, 100 gm. If needed, allow 1.5 gm. per kilogram of body weight. Also, amino acids in powder or granular form may be used as protein supplements.
   Fats, 60 to 100 gm. Fats are not well tolerated by the ill patient.
2. Morning of second day preceding surgery, give clear liquid diet with a carbohydrate value of 100 to 200 gm., total liquids 2500 cc.
3. Multiple vitamins daily, either orally or parenterally.
4. Antibodies should be given as necessary.

B. INSULIN

1. Insulin users to continue the same kind of insulin in use, with dose modified according to blood and urinary sugar determinations.
2. Non-insulin users may need insulin in view of the forthcoming anesthetic and surgery. Blood and urinary sugar levels serve as the guide. Regular or crystalline insulin may be used in multiple doses.

C. LABORATORY STUDIES

1. The following laboratory determinations are done routinely: blood sugar, CO_2, urea nitrogen, non-protein nitrogen, chlorides, potassium, proteins, and albumin-globulin ratios. Blood sugar determinations during preoperative days are repeated as necessary.
2. Urine analyses are important. Catheterized specimens should be obtained for analysis. Fractional urines for sugar and acetone should be done at the following times: 7a.m., 11 a.m., 4 p.m., and 9 p.m.

D. INTAKE AND OUTPUT CHARTS

It is important to chart intake and output during the preoperative period of the diabetic. Care should be taken to keep these records accurately.

II. Day of Operation

A. DIET

1. No food for previous 12 hours.
2. 1000 cc. 10 per cent invert sugar in distilled water, given intravenously, to be started 1 to 2 hours before surgery.
3. 1000 cc. 10 per cent invert sugar in distilled water, given intravenously, every 8 hours.
4. Vitamin K, 5 mgm., every 4 hours intramuscularly for three doses.
5. Vitamins B and C to be added to invert sugar solution, given intravenously.

B. INSULIN

1. One-fourth of the previous days total insulin dose is given, modified by the 8 a.m. blood sugar report.

C. LABORATORY STUDIES

1. Blood sugar determination to be done at 7 a.m.; **REPORTED BY 8 a.m.**
2. Blood sugar determination 3 hours after surgery, and repeated as needed.
3. Fractional urines for sugar and acetone 7 a.m., 11 a.m., 4 p.m., and at 9 p.m.

D. INTAKE AND OUTPUT CHARTS

1. Continue for 1 week.

E. OTHER PROCEDURES TO BE CARRIED OUT

1. Blood transfusions as indicated.
2. Use indwelling catheter for urinary drainage.

III. Routine Postoperative Plans During First 24 Hours

A. DIET

1. Intravenous fluids as follows, on an 8 hour schedule:
   a. 1000 cc 10 per cent invert sugar in distilled water
   b. 1000 cc. protein hydrolysate with 5 per cent glucose
   c. 1000 cc. 10 per cent invert sugar in normal or half normal saline
2. Vitamins B. C. and K as needed.

3. Clear liquids may be given on the evening after surgery if the patient can tolerate them, carbohydrate content to equal 1.5 to 2.0 grams per kilogram of body weight.
4. Carefully planned, soft diabetic diet may be started on the third postoperative day, including the following:
   a. Carbohydrates, 150 to 200 gm.
   b. Porteins, 100 gm.
   c. Fats, equal to calories needed.
5. Regular diet ordered usually between fourth and fifth postoperative day.

B. INSULIN

1. Insulin, regular or crystalline may be given according to amount of sugar, acetone, or diacetic acid in urine. Five units of insulin should be given for each 1 per cent of sugar in the urine.
2. Insulin of prolonged or intermediate action, that is, protamine zinc insulin, or globin and N.P.H., may be started on the day after surgery, or as soon thereafter as is possible.

C. LABORATORY STUDIES

1. Fasting blood sugar levels should be obtained for the first three mornings after surgery.

D. INTAKE AND OUTPUT CHARTS

1. Continue for 1 week postoperatively.

acid preparations, such as protein hydrolysates, and diet should be used to correct protein deficits. If the protein deficiency results directly or indirectly from faulty fabrication of proteins, then only plasma can be used. In this instance, the administration of amino acids would merely add a load to the already diseased and burdened liver.

11. Fluids and Electrolytes, which control hydration and dehydration. Salt and water balance play an integral part in the control of the patient with diabetes. Dehydration in diabetic acidosis may be severe, and with the accompanying electrolyte imbalance, can seriously handicap surgical recovery. During anesthesia and surgical manipulation, lowered blood volume will result in hypotension.

On the other hand, over-zealous water and salt replacement will likewise threaten the security of the patient. Hydration levels must be consistent with average normal hematocrit values and physiological sodium chloride intake. Also, consideration of the cardiovascular renal state in the diabetic must be given careful appraisal in order to avoid water-logging and overloading the cardiovascular system.

Dehydration must be treated promptly as fluid deficits pile up rapidly. However, physiological principles must be adhered to. Ordinarily three liters of fluids per day, plus one liter of fluid derived from a mixed diet is sufficient for normal fluid balance. Ravdin estimates that a seriously ill patient with drainage requires a total of 7500 cc. of fluid. Fluid intake should be adequate to insure a daily urinary output of at least 1500 cc.

Sodium needs are judged by the patient's requirements. Some patients with renal disease are unable to conserve sodium; therefore, it is best not to routinely advocate salt-free diets. The elimination of nitrogenous waste products requires water excretion along with loss of electrolytes. Also, vomiting and diarrhea will upset the electrolyte balance: sodium is retained and chloride lost in diarrhea; sodium is lost and chloride retained in vomiting. Chronic water loss is really water loss plus salt loss. Substitution therapy must include correction of electrolyte and fluid balance. Determination of the extracellular fluid volume can be estimated through the "thiocyanate available space" test. The thiocyanate space gives some estimate of the water deficit, and together with the serum chloride determination, permits estimation of the total chlorides.

Excessive administration of saline solu-

tions may cause edema. Coller, Campbell, et al., emphasize the relatively high incidence of "salt intolerance" following general anesthesia, and warn against the use of isotonic salt solutions or Ringer's solution on the operative day, especially in patients who are anemic, acidotic, oliguric, or who have low blood protein levels.

Potassium and other basic ions are also important to replace. Usually, a combination of symptoms, electrocardiogram readings, and serum potassium levels are necessary as a guide to therapy. The use of potassium solutions has little value, if any, in the preoperative preparation of the dehydrated patient, since it is not safe to administer potassium to patients with reduced urinary output.

12. Carbohydrates, which afford important protection to the liver, and supply glycogen. The surgeon and anesthetist fear most either hypoglycemia or diabetic coma in diabetic surgery. In the discussion of carbohydrates for preoperative use, Root gives the following indications for intravenous or subcutaneous carbohydrate solutions: (1) in prolonged undernutrition, (2) in the presence of slight acidosis, (3) in dehydration, and (4) in the presence of a supply of circulating insulin to insure either the oxidation of glucose or its storage as glycogen or fat. Carbohydrates must not be restricted in severe diabetics or in elderly patients before undergoing surgery. The liver must be protected with an ample supply of glycogen.

13. Insulin, which relieves the clinical symptoms of the diabetic patient. Well-controlled diabetics, regulated on diet alone, may come to need insulin in the presence of infection. Blood sugar and urine analyses are the guide here. Patients already receiving insulin will, on the morning of surgery, be given from one-fourth to one-half their total daily insulin dose. This rule holds true for protamine zinc insulin, globin zinc insulin, and N.P.H. insulin. If the patient is receiving regular or crystalline zinc insulin in multiple injections per day, it may be advisable to give insulin postoperatively.

Success in diabetic surgery requires team work, not only between the medical man and the surgeon, but also with the anesthetist. It is the duty of the medical man to inform the surgeon of all conditions found, and for these two to discuss the cardiovascular and renal conditions with the anesthetist. This enables the anesthetist to best choose the most effective type of anesthetic for the diabetic.

The anesthetics of choice from the diabetic point of view are the following: (1) intercostal nerve block, (2) spinal, and (3) intravenous with inhalation anesthesia. Whatever the choice, anoxia must be avoided. Chloroform is contraindicated in the diabetic. Ether may be used in mild diabetics, though it is not advised in moderate to severe diabetics. Gas oxygen induction followed by ether may be used by a skilled anesthetist with satisfaction. Spinal anesthesia is the anesthetic of choice for colon surgery except in the very young patient.

During anesthesia and surgery, hypoglycemia, hypotension, coronary insufficiency, abnormalities of fluid and electrolyte balance, anemia, blood dyscrasias, cerebrovascular disorders, and malnutrition may interfere with the successful completion of the undertaking. Since "the composition of the blood is determined not by what the mouth ingests, but by what the kidneys keep", this vital work of the kidneys may be made more difficult in the surgical patient by such factors as the development of hypotension, by circulatory collapse, and by the effects of anesthetic agents or other drugs on the kidneys.

For these reasons, the many facets of the diabetic patient must all be organized and treated as a whole. The accompanying plan has been worked out by the author for the management of the diabetic undergoing surgery.

Conclusions

1. The diabetic patient under good control presents no serious problem for emergency or elective surgical intervention, and may be expected to have as good a result and recovery as the non-diabetic patient.

2. Medical studies, which include administration of vitamins, proteins, fluids, electrolytes, carbohydrates and insulin will insure good control of the diabetes, and therefore a good surgical recovery also.

3. The anesthetic should be chosen to suit the individual case. Spinal anesthesia is the anesthetic of choice for the diabetic requiring colon surgery.

4. A plan for the preoperative, operative, and postoperative management of diabetic patients undergoing surgery is presented.

5. Success in diabetic surgery depends upon careful and full cooperation between the internist, the anesthetist, and the surgeon.

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International Academy of Proctology Award to Albert Einstein College of Medicine

The International Academy of Proctology announces the establishment of a Teaching and Research Fellowship in proctology under the direction of Dr. Marcus D. Kogel, Dean of the newly formed Albert Einstein College of Medicine, New York City. The Academy has voted a $1,000 Annual Grant for each of three years to assist in the development of research and educational projects in proctology at the University.

One of the suggested projects is the establishment of a pathological tissue slide "library" for teaching purposes, under the direction of Dr. Alfred Angrist, Professor of Pathology.

In July 1954, the 511 bed Manhattan Hospital for Chronic Diseases opened. The General Hospital is scheduled to open in January, 1955.

As emphasized at the time of the sixth Annual Convention of the Academy in Chicago, the major function of the Academy is educational. All Academy funds are to be used for research and teaching projects in proctology so that earlier diagnosis and better treatment of patients with diseases of the colon and rectum may be made universally available.

EDITORIALS

The most common diseases in Mexico, according to statistics, are the gastrointestinal disorders. Playing a very important role are the parasitic diseases, and number one in this group is amebiasis. For that reason we have a great number of coloproctologic patients.

To treat these patients it is necessary that every physician,—every general practitioner,—have the necessary knowledge and skill for proper diagnosis and treatment, at least of the most common problems of the proctologic field.

As the number of patients is large, the problem can not be solved by specialization of a group of physicians. Such specialists can only treat a limited number of patients.

Actually these patients are treated by general practitioners and by general surgeons,—in lesser degree by gastroenterologists, and in a few cases by a proctologist.

To help in the solution of this problem, the members of the Mexican Chapter of the International Academy of Proctology, are planning a big educational campaign through the medical schools. To teach the students the new technics of proctology, to show them—practically—the importance of clinical study,—a digital examination, as well as the radiological and endoscopic studies,—and to teach them also the most common pathology in proctology, and its medical and surgical therapy,—are the goals of our campaign.

Graduate education in Medical Schools and Teaching Hospitals will employ courses, lectures, procotological films, wet clinics, etc. Special emphasis will be placed upon how to handle the patient and—how to solve the most common problems which are named "little problems" for many physicians, but are so important and big for the patient who suffers them.

Dr. Pereda

The Chapter will try to grow in number of members, and also will try to do clinical work in proctology, and will publish all the work not only in National Journals but also in the Journal of the Academy. In Mexico we have a large material in parasitosis and amebic colitis; such studies can be very useful for foreign physicians who live in places where those diseases are not so common.

As part of the teaching campaign we will ask the Officers of the International Academy of Proctology to send a group of Teaching Fellows to give a graduate course in Proctology in Mexico City.

The Third National Congress of Gastroenterology, sponsored by the Mexican Gastroenterological Association, will be held in Mexico in the Spring of 1955, and will be devoted completely to the study,

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This month's first guest editorial is presented by Dr. Francisco Puente Pereda, M.D., Fellow of the Academy of Proctology; Chairman of the Mexican Chapter; 3rd Vice-President, elect; Fellow of the Mexican Gastroenterological Assn.; Fellow of the Red Cross Medical Society, Mexico; Fellow of the Surgical Society, Juarez Hospital; Fellow of the National Surgeons Assn. Society, Mexico; Fellow of the Mexican Angiological Society; Head of the Emergency Surgery Service, Social Security Hospitals, Mexico City; Surgeon, Central Hospital SCOP, Mexico; Professor of Surgical Technic, Medical School; National University of Mexico.

diagnosis and treatment of the colon, rectum and anus diseases. To this Congress are invited outstanding physicians of the world, members of the best known Universities and Medical Schools, as well as Hospitals. We hope that Congress will improve the knowledge of the different diseases of colo-proctology and will yield the most modern treatment.

In summary, the Mexican Chapter of the International Academy of Proctology will be devoted to the popularization of proctology in Mexico, both among patients and physicians, to obtain through this medical and hygienical education a better standard of living for the Mexican population.

Francisco Puente Pereda, M.D.

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Coloproctologic Lesions and Industrial Compensation

With approximately 133,000 industrial injury claims in 1953, resulting in liability to the extent of 38 million dollars by the industrial insurance carriers, the relatively small proportion of claims arising from alleged coloproctologic injuries becomes considerable in terms of total numbers of dollars.

Since the claim experience rating of an employer is reflected in his annual premium, industry is ever alert to reducing to a minimum the number of accidents and claims, increasing safety measures, treating minor injuries immediately, and dismissing incredible claims at the source.

Although state industrial accident commissions are designed to arbitrate claims and make awards impartially, it has become increasingly evident that a commission will find for the employee if the injury can be shown to have arisen in the course of employment, although the original intent of workmen's compensation laws was based on personal injury due to, and sustained while at, his occupation.

Coloproctologic claims constitute about one tenth of 1% of industrial accident claims, and although the number is small, the physician, whether or not he is a member of the carrier's panel, making a report to the insurance carrier must be guided not only by the claimant's history of injury, but by the feasibility of the claimed causal relationship between employment and injury.

Surgeons experienced in treating industrial injuries are aware that the facts obtained during the first visit of the claimant and the data contained in the doctor's first report of work injury are weighty factors in determining the compensibility of the injury. The doctor who is inclined to state that an injury is job-connected, when, in truth, it is not, is directly increasing the cost of the employer's industrial compensation insurance, which derives ultimately from the worker's wage. A contentious patient can sway considered medical judgment, but reporting a non-industrial injury as industrial, when the physician believes the reverse to be true, is utterly non-conscionable.

Clearly compensible coloproctologic injuries, such as direct injury, laceration, and impalement during a fall, must be accepted per se. However, a tumor of the ano-rectum or colon, fissure, fistula, hemorrhoids, para-rectal abscess, pilonidal abscess, and prolapse have no relation whatever to occupational injury. Yet, on occasion, industrial accident commissions have ruled that hemorrhoids, for example, developing common complications on the job are compensible to the extent that the aggravation reasonably can be attributed to the particular occupation. Such a ruling is a strain on the most puerile imagination. There is no basis in fact that

pruritis ani, prolapse, para-rectal abscess, or coccygodynia, are connected singularly in any way with a particular occupation.

A window washer in an office building, who has had an intermittently draining para-rectal abscess due to a fistula-in-ano of many years duration, and who falls on her buttocks while opening a window cannot claim that the drainage from the old abscess which began a few days after the fall is an industrial injury and that definitive treatment of the fistula is a liability of the insurance carrier. Such a preposterous claim, refused by an insurer in California, was heard by the California Industrial Accident Commission, because the doctor who treated her rectum held that the new abscess was an aggravation (of a pre-existing disease) caused by her fall, and that his fees and her disability compensation were the responsibilities of the insurance company.

Dishonesty is reprehensible anywhere. In insurance reports, it reflects to the discredit of the physician in the eyes of the claimant and of the insurer. A doctor does not maintain a patient's confidence by falsifying insurance reports, although this practice is wide-spread. Furthermore, insurance carriers have earmarked those doctors who lean to inaccurate reports and who hasten to give more than emergency treatment without authorization. On the other hand industrial compensation carriers readily permit extended, and specialized, treatment by any doctor who submits an honest initial report and opinion.

Coloproctologists form an expanding specialty group to which insurance carriers refer claimants for specialist opinions and specialized treatment. Only rigid adherence to unvarnished truths, without embellishment, will eventuate in retention of coloproctologists on the lists of specialists in insurance company files.

Carroll J. Bellis, M.D.

FELLOWSHIP KEY

A Fellowship Key of 10K Gold as illustrated, is now available to Fellows of the International Academy of Proctology.

Applications for the Fellowship Key should be made to the office of the Secretary, 43-55 Kissena Blvd., Flushing, N.Y.

A check in the amount of $15.00 should accompany the order for the key.

The Pecten Area, The Pecten Band and Pectenotomy

MANUEL G. SPIESMAN, M.D.
LOUIS MALOW, M.D.
Chicago, Ill.

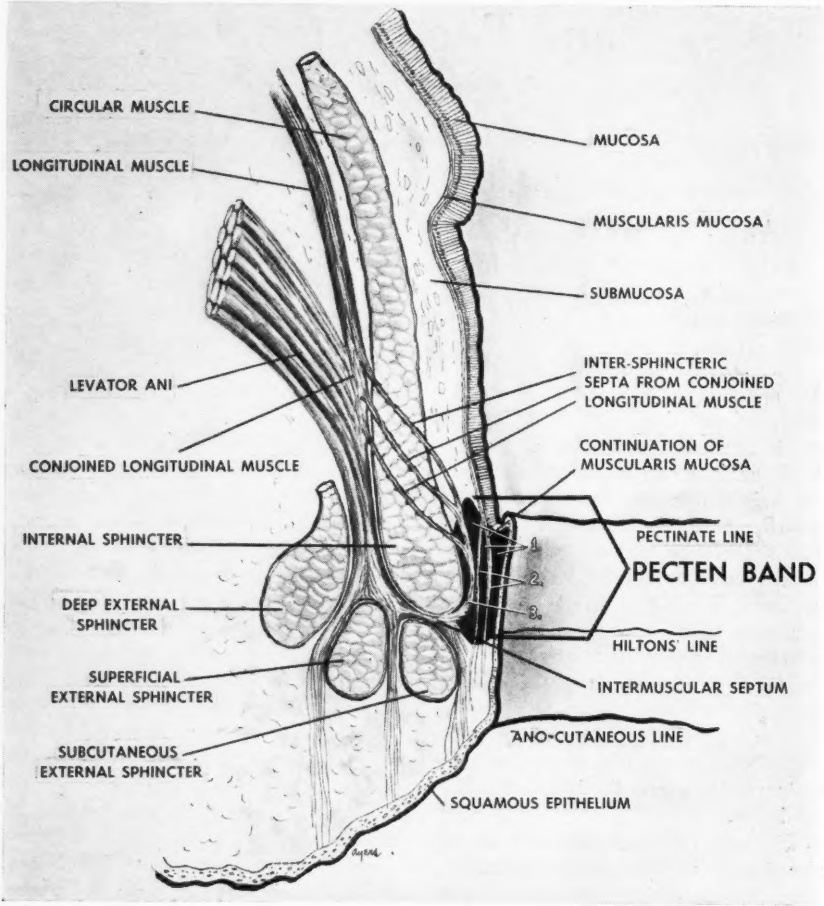
Anatomy of the Pecten Area The pecten area, according to Stroud, is an anatomical landmark located between the pectinate line and Hilton's white line (Fig. 1). It is about one-half inch in width. Its color is intermediate between skin and mucous membrane, and it has a glistening, smooth appearance. The pecten is lined by modified anal skin, in which the corneum is markedly thinned, and hair follicles, sebaceous glands, and sudoriferous glands are absent. The pecten is therefore neither true skin nor mucous membrane. It is a very important landmark because it divides ectodermal structures from entodermal. More specifically, it divides the internal hemorrhoidal vessels above from the external hemorrhoidal vessels below; the autonomic nervous system above from the cerebrospinal below; and last of all the lymphatic drainage above from the lymphatic drainage below.

Etiology of Pectenosis Chronic passive congestion from either internal or external hemorrhoids may lead to passive congestion in the pecten area, because the tributaries from the superior and the inferior hemorrhoidal veins arise from a minute capillary plexus in the submucosa of the pecten. Hypertonicity or spasm due to chronic cryptitis or inflammation, also may produce a local passive congestion. Constipation, straining at stools, lacerations resulting from the passage of hard stools, irritating liquid stools, may also cause a passive congestion in the anal canal. Passive congestion in this area from any cause, is followed by round cell infiltration and a circular deposit of fibrous connective tissue in the subepithelium of the pecten area. Such a deposit in the area of the pecten produces the condition called "Pectenosis". Abel likens this fibrous tissue deposit to the indurated zone around a varicose ulcer of the leg, or to the fibrous change in the wall of the esophagus opposite the whole length of the cardiac spincter in cardiospasm, or to the dense fibrous tissue in the gastric wall opposite an ulcer forming the hour-glass stomach.

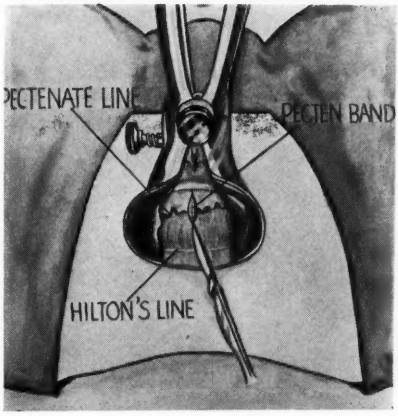
The longer chronic congestion exists, the more fibrous connective tissue is deposited and the denser becomes the pecten band. The lining becomes avascular, loses its elasticity, and the anal canal becomes rigid and narrower. When one digitally examines this area, the finger feels tightly squeezed by the contracted lumen. The size and caliber of the feces become diminished and the patient complains of difficulty in obtaining complete emptying of the rectum. The more difficult it is to defecate, the more the patient strains and the more aggravated becomes

any existing hemorrhoidal condition. A vicious circle is established because with more pectenosis there is increased straining, which results in increased passive congestion and a more dense pecten band.

Sequelae of Pectenosis Because of the fibrous tissue deposit in the submucosa of the pecten area, the mucous membrane, instead of being freely movable over the adjacent tissue, becomes anchored to it



Schematic illustration showing the location and constituents of a pathological pecten band (solid black). Pecten bands are found between the anal epithelium and the sphincter muscles from Hilton's line to the pectinate line and vary in thickness from 1.5 to 4.5 millimeters. The solid black (1) in the pecten band indicates varying amounts of fibrous connective tissue (average about 64 per cent). The lighter striped bundles (2) are smooth muscle tissue fibres, continuation of the muscularis mucosa. The remaining lighter striped bundles (3) are terminal smooth muscle fibres from the inter-sphincteric septa through the internal sphincter and intermuscular septum; both originating from the longitudinal and conjoined longitudinal muscles.



Step 1. Directly over the midline posteriorly an incision is made through the mucosa parallel to the long axis of the bowel, extending from above the pectinate line. Note grayish-white fibers below mucous membrane.

and poorly nourished with blood, which renders it more easily vulnerable to trauma. Normal crypts of Morgagni may then become traumatized by seeds, skins and fibers in the stool, with resulting infection and inflammation of the crypts and anal glands, producing the condition known as cryptitis. Infected inflamed crypts and anal glands become a definite focus of infection and irritation. Chronic discharge from an infected crypt causes inflammation of the adjacent semilunar valves with resulting hypertrophy of the papillae, terminating as a papillitis. A constipated hard stool may crack open a crypt or any portion of the poorly nourished tightly adherent anal canal with a resulting fissure-in-ano. If, owing to fibrous contraction of the anal canal or occlusion of the opening of the crypt or gland by particles in the stool, pyogenic substances are imprisoned, an abscess develops which is usually followed by a fistula.

Research Background of Pectenosis Several years of histologic, microscopic study of postmortem recta of adults, infants, new born and prematures, plus microscopic study of many sections of excised portions of pecten bands, revealed the following:

The pecten band is not a normal structure but a pathologic entity, the direct result of chronic infection and passive congestion of the pecten area. No pecten bands were seen in specimens of the new born, young infants or prematures. Pectenosis is found in the subcutis of the pecten area between Hilton's line and for a short distance above the pectinate line. Pecten bands vary in thickness from 1500 microns to 4200 microns in the specimens examined by us. The pecten band tissue examined revealed lymphocytes, fibrous connective tissue and occasionally hyalinization. It is our impression that the longer the duration of the condition the more fibrotic, thicker and hyalinized is the band.

No specimens examined revealed extension into or involvement of the spincter muscles. Smooth muscle fibers seen in microscopic studies of pecten bands were found to be continuations downward of the submucosa of the rectal epithelium plus terminal branches of the conjoined longitudinal muscles. (Fig. 1.).

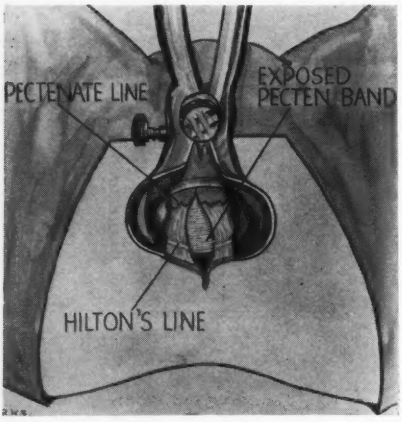
Symptoms Because of the anal tightness, the patient experiences difficulty in obtaining a satisfactory bowel movement. The stools become diminished in caliber, and the patient develops anal consciousness. If the band exists uncomplicated by any other anorectal pathology no pain is experienced by the patient. However, if cryptitis, papillitis and fissure-in-ano are found to exist in combination with the pectenosis, then anal pain is a common complaint.

Diagnosis The diagnosis is based upon a history of the above symptoms in conjunction with the physical findings. Digital examination reveals a tight anal canal, which hugs the examining finger. In well marked cases the pecten band gives the impression of a snug ring beneath the skin just inside the anal margin.

Differential Diagnosis Pectenosis must be differentiated from postoperative anal stenosis, stricture (lymphopathia venereum) and carcinoma. In postoperative anal stenosis there is a history of previous anorectal surgery with a subsequent marked difficulty in bowel movements. In most cases the examining finger is not admissable, while in pectenosis there is felt only a tightness on insertion of the examining finger. In lymphopathia venereum strictures the patient is usually a colored female; a bloody, purulent, cherry juice discharge is noted and the Frei test is positive. The stenosis frequently feels much like the post-operative stenosis, only it is higher in the anal canal and extends into the rectum. Annular scirrhous carcinoma of the anorectum feels much like that of lymphopathia venereum stricture, except that the patient is usually a white person and the diagnosis is made by biopsy.

Treatment The treatment, called pectenotomy, is the surgical incision of the band. Clean surgery severs the band and relaxes the anal canal.

Operative Technic With the patient in the lithotomy position, the usual pentothal and local anesthetic is used. The anorectum is spread with a bivalve speculum. The mucous membrane from above the pectinate line to below Hilton's white line is incised to the right or left of the posterior line (Fig. 2), exposing the band, which is grayish white in appearance. The band is incised down to the fascia covering the sphincter muscles (Fig. 3). Fibers of the sphincter, if encountered below the fascia, are mahogany in color (Fig. 4). Any other anorectal pathology may then be treated surgically. Bleeding vessels are coagulated, a small cigaret drain is inserted in the anal canal, and a tight ball packing and binder is applied.



Step 2. Pecten band exposed, ready to be incised in the midline. Watch for reddish sphincter muscle below band.

Step 3. The incision is carried deeper until the complete thickness of the dense fibers of the pecten band is divided and the fascia or reddish-brown fibers of the external and internal sphincters are visible.

Should the External Sphincter be Incised in Fissure-in-Ano Operations? We feel certain that a proper understanding of pectenosis will render unnecessary the common practice of incising the sphincter muscle in the management of fissure-in-ano and other conditions associated with pectenosis. We also would like to reeemphasize the fact that in all our microscopic studies of pectenosis, we have never seen one specimen in which the

band involved the sphincter muscles. We have found over a period of 20 years that the anal canal will relax just as soon as the grayish white fibers of the pecten band are incised. We also feel that many proctologists and general surgeons are cutting the pecten band in fissure operations, believing it to be the external sphincter. This procedure is quite understandable because we, too, thought the pecten band was the external sphincter before we understood pectenosis. If one will familiarize oneself with the operation and note the complete relaxation which occurs after incision of the pecten band, the sphincter muscle will never be cut again in fissure-in-ano operations.

Is Ano-Rectal Divulsion Necessary

We feel that stretching of the anal canal (divulsion) tears the fibers of the pecten band in numerous places with resulting multiple areas of extravasation of blood, and consequently the further increased formation of fibrous connective tissue. We believe that recurrent fissure-in-ano is the result of increased pectenosis following divulsion. We feel that divulsion is an unsurgical procedure; is not necessary, and is responsible for the formation of a worse pecten band than that which existed before. We believe that a proper understanding of pectenosis will negate the necessity of divulsion of the ano-rectum.

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Postgraduate Continuation Courses for Proctologists

Institution	Title of Course	Schedule of Course	Registration Fee and/or Tuition
Cook County Graduate School of Medicine, 707 S. Wood St., Chicago 12	Lecture and Cadaver Course in Proctology	Oct. 13, 5 days, part time	100.00
Joint Committee on Post-Graduate Education, 1313 Bedford Ave., Brooklyn 16[1] At: Jewish Hospital	Proctology	October, 12 weeks, part time	40.00
New York Polyclinic Medical School and Hospital, 345 W. 50th St., New York 19	Proctology, Gastroenterology, Operative Proctology (Dissection)	October, 6 weeks, part time	200.00
	Clinical and Cadaver Proctology	January, 6 months, part time	200.00
	Clinical Proctology	Arranged, 6 weeks, part time	75.00
	Clinical and Cadaver Proctology	Arranged, 6 weeks, part time	175.00
University of Texas Postgraduate School of Medicine, 1400 Outer Belt Dr., Houston, 25 At: Scott and White Memorial Hospital; Scott Sherwood and Brindley Foundation; University of Texas Postgraduate School of Medicine, Temple	Proctology	Arranged, 2 weeks, full time	25.00

Anorectal Complications of Chronic Ulcerative Colitis

In their order of frequency the anorectal complications of chronic ulcerative colitis are:

1. Polyposis and malignant degeneration.
2. Rectal stricture.
3. Abscess and fistula.
4. Hemorrhoids.
5. Anal ulcer.
6. Anal incontinence.

An incidence of polyposis and malignancy of 8.9% was reported by Bargen in 1500 patients. Jackman and Mayo indicate a frequency of 10 to 12%.

The earliest stage in the formation of polyps is the mucosal tag. This is actually a psudopolyp, but the later stage is often adenoma or adenocarcinoma. Two or three per cent of the chronic ulcerative colitis patients ultimately develop carcinoma.

During a period of remission all polyps within reach of the sigmoidoscope should be fulgurated. Those at higher levels should be carefully observed at frequent intervals. If the gross appearance indicates malignant degeneration, colectomy (with ileostomy) should be performed without delay.

Chronic ulcerative colitis practically always narrows the lumen of the colon. Localized rectal stricture was reported in 9% of 871 cases reviewed by Jackman and Mayo.

These authors recommend a posterior proctotomy for a low-lying stricture, performed while the colitis is in remission. The mucous membrane above the proctotomy is pulled down over the resulting wound. Hot retention enemas are tnen advised twice daily, or rectal diathermy, for six to eight weeks.

Anorectal abscess and fistula is the next most common complication of chronic ulcerative colitis. The ultra-conservative attitude of the past toward this complication is changing. This author has always advocated that complete abscess and fistula surgery should be combined and performed in such cases without delay. This is the only way to prevent complicated fistula formation, and incontinence from muscle destruction. It is not enough merely to incise and drain abscesses.

Of course, while the colitis is acutely active, surgical intervention should be limited. Under these circumstances incision and drainage of acute abscesses may be the best approach. It is naturally best to perform fistulectomies during the remission stage.

Good surgical judgment is necessary. It is sometimes better to run the risk of an indolent wound after a fistulectomy, rather than to subject the female patient to the possibility of rectal-vaginal fistula from limited (incision and drainage) surgical intervention.

The relationship of hemorrhoids to chronic ulcerative colitis is merely one of coexistence. In the early stages of ulcerative colitis, with ulcerations limited to the rectal mucosa of the hemorrhoidal area, it is sometimes difficult or impossible to make an accurate differential diagnosis. In such cases a hemorrhoidectomy may be performed, the true nature of the in-

flammatory process not becoming evident until after the hemorrhoidal surgery. It is, of course, entirely possible that the ulcerative colitis may develop in totally unrelated fashion, within months after a hemorrhoidectomy.

Inasmuch as these patients are sometimes constipated in the early stages of the colitis, differential diagnosis is impossible.

Anal ulcer is best treated conservatively during the acute stages of the colitis. Anesthetic solution or ointments may be applied topically. Hot anal irrigations will relieve spasm and assist in healing.

Complete excision of the ulcer is best reserved for the remission stage.

Anal incontinence may be the result of destruction of the sphincter mechanism by frequently recurring abscesses. Scar tissue, immobilization of the muscle, and destruction by recurring abscesses, can be prevented by proper surgical intervention, as above described. Anal incontinence, of course, may also result from the general debility produced by the ulcerative colitis.

The combination of an active chronic ulcerative colitis and anal incontinence is best treated by colectomy and ileostomy.

Suggestions for Contributors

The American Journal of Proctology welcomes original articles of interest to anorectal and coloproctologists. Manuscripts offered for publication should be sent to the:

Editor
American Journal of Proctology
43-55 Kissena Boulevard
Flushing, New York

Original manuscripts, not carbon copies, typed double spaced on one side of the paper, leaving wide margins, with all pages numbered, should be submitted. Authors should retain copies of papers submitted, since the accepted originals will not be returned. Numbers under one hundred should be written out, except when used for percentage, dosage, degrees, or decimals; for numbers above one hundred numerals should be used. Dorland's (for example) Medical Dictionary and Webster's International Dictionary may be used as standard references. Scientific names for drugs should be used; copyright or trade names should be capitalized; names appearing in New and Non-official Remedies should be indicated by superscript ®. Units of measurement, such as length or dosage, should be expressed in the metric system; temperature should be in degrees centigrade. The American Journal of Proctology is international in scope, and contributions from foreign authors will be considered, and, if accepted, will be translated and published in English.

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Illustrations should be numbered, the top of each plainly indicated, and the author's name and abbreviated title of the article should appear on the back of each. Line and wash drawings should be black on white paper, with lettering in black India ink large enough to be readable on reduction. Only original drawings and charts, not photographs, should be submitted. Black and white photographs should be in the form of glossy prints. Direct contact glossy prints from the original roentgenograms should be submitted. The magnification of all photomicrographs should be stated. The publisher may limit the number of illustrations reproduced free of charge. (Colored illustrations will be published at the author's expense).

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Therapeutic Abstracts

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Surgical Treatment of Chronic Ulcerative Colitis.

BLACK, B. M. and SHOLL, P. R.:
Arch. Surg., 68:454-462 (April) 1954.

Since ". . . the success of surgical treatment of chronic ulcerative colitis is . . . limited by the problems associated with the ileac stoma . . . and aware that the complications after formations of ileac stomas are . . . still numerous and so formidable that any material broadening of indications for operation is not warranted. . ." 130 colectomies for this disease were studied, including 28 patients in each of whom one stage ileostomy and coloproctectomy (1 death) were carried out. Attesting to a wide experience, the ease of removing the contracted rigid colon is mentioned and the complications relating to the ileal stoma (the confusing adjective ileac is used) are discussed. Most troublesome were partial ileal obstruction due to stenosis at the stoma, prolapse, cutaneous excoriation, and hernia through the abdominal wall beside the ileal stoma, but more puzzling than the puzzlement of the authors is the statement, "Why this complication (hernia), which occurs so regularly after colonic stomas (!) does not occur more often after ileac stomas is difficult to explain." It is doubtful that many surgeons have experienced the authors' misfortune of regularly observing herniations adjacent to colostomies. Immediate skin grafting of the ileal stoma in each of 80 cases did not influence the development of excessive ileal discharge, obstruction within the abdomen, abscesses, or fistula, though the incidence of prolapse and excoriation of the abdominal skin was reduced. Twenty-one of 33 non-grafted stomas (about two-thirds), and 35% of the skin grafted stomas (a little less than half) developed complications. Five per cent of the skin grafted stomas exhibited major complications, 25% of the original skin-grafted stomas required re-operation, and 10% eventually were satisfactory. Surgical treatment of chronic ulcerative colitis is indicated in only 10% of the cases. "Until the ileac stoma can be made more acceptable by reducing the number

—Continued on page 240

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—Continued from page 238

of complications, 'intractable disease' should rarely be considered an indication for surgical treatment."

C. J. B.

Colostomy. Advantage of Establishing an Immediate Mucocutaneous Suture.

LEMMER, K. E. and MEHNERT, J. H.:
Arch. Surg., 68:463-468 (April) 1945.

Fifty-five colostomies were observed, a separate incision in one anteroposterior plane through the layers of the abdominal parietes, with excision of an ellipse of skin and cruciate incision of the fascia, having been made for the end colostomy. Interrupted vertical Halsted mattress sutures of 00 or 000 plain catgut on a cutting needle evert the circumference of the open bowel to the skin edge. For a loop colostomy, a fascial bridge is formed through the mesentery, the bowl opened in its long axis immediately, and the approximation described carried out. Use of the descriptive term "mucocutaneous" may be misleading, since the suture is of whole thickness bowel wall to skin; perhaps, colocutaneous may be more accurate. With this method, no bowel retraction was observed, primary union being the rule, irrigations of the colostomies being initiated as early as the second day. Notwithstanding this somewhat remarkable and commendable advance in colostomy care, one of the discussants of this excellent presentation, apparently unaware that the colostomy bag long ago was assigned a niche in the limbo of hideous surgical curios, devotes his discussion period to literal advertising of a type of colostomy bag. Not taken aback by the fame of the discussant, the essayist gently, firmly, and expertly dismisses the reversion to the hoary past of colostomy care by tersely and quite correctly (though a bit ungrammatically) stating ". . . when a patient needs a colostomy bag, it usually means that we have not properly . . . trained (the patient) to irrigate and take care of (the colostomy). Most of our patients . . . are able to irrigate their colostomies once a day, and get along with . . . a little pad. . . . If the patients are taught to handle their colostomies properly, most of them will not need a bag."

C. J. B.

Abdominoperineal Resection with Sphincter Preservation for Carcinoma of the Midrectum.

WAUGH, J. M., MILLER, E. M.,
and KURZWEG, F. T.:
Arch. Surg., 68:469-485 (April) 1945.

Reserving abdomino-perineal proctosigmoidectomy with colostomy for cancers located within the distal 5 cm. of the rectum, the sphincter preserving operation ("pull through"; Hochenegg) is believed to be adequate for lesions between that level and the one permitting anterior resection. In support of this thesis, 165 patients, in each of whom the "internal sphincter" was removed and the external sphincter retained, were studied. 21 of these (12.7%) were palliative operations, with 6 hospital deaths (3.6%). Giving a clear description of the surgical technique (without illustrations), presacral infection (23%), vesical dysfunction (20%), and retraction of the transplanted sigmoid were the most frequently encountered complications. Anal stenosis requires daily dilations for six months, and two or three times weekly for the next six months, but satisfactory continence was achieved in 77.4% of the cases. 62% of the patients survived 3 years (only 41% of those

—Concluded on page 242

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(1) Sweatman, C. A.: J. So. Carolina M. A., 49:38, 1953. (2) Marks, M. M.: Am. J. Dig. Dis. 18:219, 1951. (3) Hamilton, H., in Trans. 5th Am. Cong. Obst. & Gyn., Mosby, 1952, p. 69. (4) Burnikel, R. H., & Sprecher, H. C.: Am. J. Dig. Dis. 19:191, 1952. (5) Marks, M. M., Personal Communications, 1952-53.

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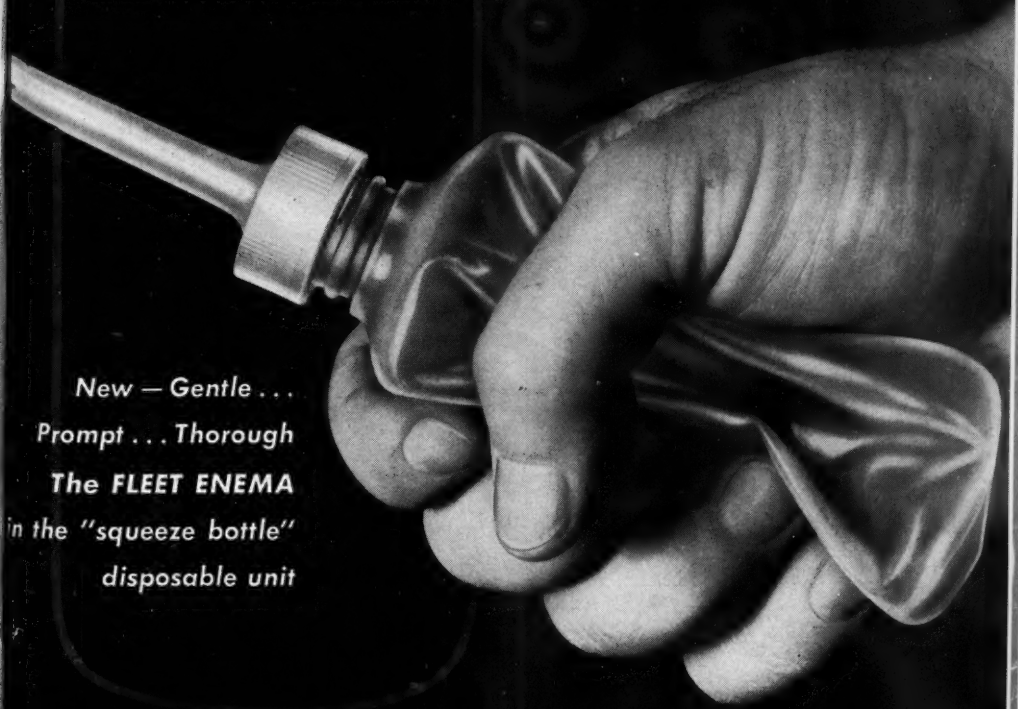

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—Concluded from page 240

with nodal involvement); 51% were alive 5 years after operation (only 30% of those with nodal involvement). 68% of those without nodal involvement survived 5 years. This is an important study by one of the most brilliant surgeons of our time.

C. J. B.

Acute Obstructions of the Colon.

MICHEL, M. L., JR., THOMPSON, C. T., REINSTINE, H. W., SENTER, R. R., and DALE, D. B.:
Ann. Surg. 139:806-815 No. 6 (June) 1954.

Of 200 cases of acute colonic obstruction 23% (46 cases) ended fatally, more than half of the deaths occurring in the ages beyond 70 years. "The fundamental error in all 46 cases was the same: most often (sic) there was not a vigorous attempt to investigate the cases thoroughly and arrive at a correct diagnosis. If the proper examination were begun, they (sic) were not carried through." In a frank reappraisal of the mortality causes, the authors admit that small intestinal intubation with the Miller-Abbot tube used as a primary therapeutic procedure in 37 cases (17 fatalities) was an earlier error. In spite of this experience, this treatment was employed in 3 cases, 2 of whom, of course, died. The 11 fatalities in the 30 patients submitted to primary resection is a surprisingly small number, which the casual reader should not interpret as evidence of proper procedure. Correctly stating that cecostomy as a decompressive vent has no place except, perhaps, for right-sided obstructions, the additional observation is made that ". . . ileotransverse colostomy is preferable. When the obstruction is in the cecum or ileocecal region, ileotransverse colostomy is obligatory." Surgeons of mature experience must deny this, and those undergoing surgical training will be better off to overlook what is a statement of opinion only, unsupported by the documentation of those with enlarged experience. This reviewer is impelled to oppose categorically the statement that "Barium is . . . harmless when it is introduced by rectum in obstruction of the colon" and to take firmly to task the recommendation that the barium enema should be used to differentiate between large and small bowel obstruction. At the risk of appearing pedantic, one may state that if the quality and quantity of the vomitus and if a plain film of the abdomen cannot serve to make the differentiation, a re-reading of Wangensteen's contributions on intestinal obstructions would be helpful.

C. J. B.

One-Stage Resection in Selected Cases of Sigmoid Diverticulitis.

MOORE, R. M. and KIRKSEY, O. T., JR.:
Ann. Surg. 139:826-832 No. 6 (June) 1954.

After the familiar tiring references to previous publications, a rambling series of fourteen case reports is presented in which primary resection is shown to be possible without a mortality, provided that adequate mobilization for approximation without tension can be carried out and with the further caution that abscess or peritonitis is not present. Better organization of material and composition by a good medical writer could have brought out the importance of this mediocre presentation.

C. J. B.

The Relationship of Chronic Ulcerative Colitis to Malignancy.

HURT, L. E.:
Ann. Surg. 139:838-843 No. 6 (June) 1954.

Two cases of carcinoma are described, developing after long-standing chronic ulcerative colitis with the frequently coexisting polyposis.

C. J. B.

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BOOK REVIEWS

FOR PROCTOLOGISTS

ATLAS OF EXFOLIATIVE CYTOLOGY by George N. Papanicolaou, M.D., Ph. D., Clinical Professor of Anatomy Emeritus, Cornell University Medical College. Harvard University Press, Cambridge, Mass. 1954.

This loose-leaf Atlas is an important contribution to the study of Exfoliative Cells. It provides excellent illustrations of typical Exfoliative Cells, chiefly from the female genital system, but also from the urinary and male genital systems, respiratory system, the digestive system, various exudates, and the breast. There are also miscellaneous smears from various body fluids, cells showing the effect of irradiation, etc.

The loose-leaf format is particularly suitable for a relatively undeveloped field. Newer findings will be made available in the future, to keep this book up to date.

The illustrations are very beautifully presented, and the text material is arranged on the facing pages for easy reference and reading.

This Atlas is an important contribution, and is recommended for all gastroenterologists and proctologists, as well as for others interested in Exfoliative Cytology.

ADVANCES IN CANCER RESEARCH Volume II edited by Jesse P. Greenstein, National Cancer Institute, U. S. Public Health Service, Bethesda, Maryland and Alexander Haddow, Chester Beatty Research Institute, Royal Cancer Hospital, London, England. 530 pages. Academic Press Inc., New York, 1954.

The quality of writing, the scope of the contents, and the highly authoritative background of the writers, make this a fitting companion volume to volume I of Advances in Cancer Research.

The emphasis in this volume is upon carcinogenesis.

There is an excellent discussion of "Biological Alkylating Agents", and the interesting observation that these agents may be described as "Radiomimetic".

The text considers the reactions of carcinogens with macromolecules, carcinogenesis and tumor pathogenesis, genetic studies in experimental cancer, the systemic and nutritional consequences of established tumor growth, the role of viruses in the production of cancer, and experimental cancer chemotherapy. The latter chapter indicates that "useful but no curative agents against cancer have been found".

This book should be of interest to all internists, general surgeons and proctologists as well as to those involved in basic cancer research.

A.M.A. FUNDAMENTALS OF ANESTHESIA Third edition prepared under the Editorial Direction of the Consultant Committee for Revision of Fundamentals of Anesthesia, a publication of the Council on Pharmacy and Chemistry of the American Medical Association. 279 pages. 89 figures. Price $6.00. W. B. Saunders Company, Philadelphia and London 1954.

This excellent little volume evaluates each of the anesthetic agents in common use, carefully illustrates the technic of administration, and points out the possible complications.

It is a highly authoritative book, prepared under the Editorial direction of the Consultant Committee for Revision of Fundamentals of Anesthesia of the American Medical Association. The volume is short, emphasizing principles rather than details. However, it is entirely adequate for the average physician, and may be highly recommended.

ANESTHESIOLOGY by Forty American Authors Donald E. Hale, A.B., M.D., M.S., F.A.C.S., F.A.C.A. Supervising Editor, Head of Department of Anesthesiology, Cleveland Clinic, Cleveland, Ohio 722 Double Column Pages, 149 Illustrations. F. A. Davis Company, Philadelphia. Price $15.00.

This is a very excellent contribution to Anesthesiology. Each of the authors presents

—Concluded on page 246

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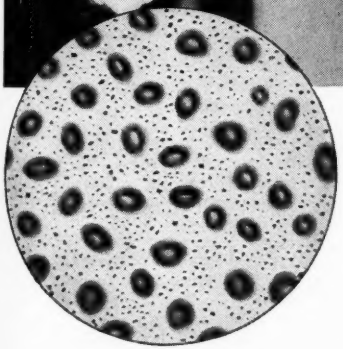

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—Concluded from page 244

a highly authoritative and comprehensive section. The editing is excellent, and the reference value of the work is unparalleled.

The proctologist may be disappointed in not finding illustrations referable to his field in the section on conduction anesthesia. Caudal block deserves illustrating.

However, this is a relatively minor defect, and the illustrations in all other sections of the text are both adequate and excellent.

The section on control of pain is particularly valuable, and written from a common sense viewpoint. Indeed, every section is worthy of study.

This book should be valuable not only to the anesthesiologists, but to surgeons generally.

MANUAL OF PROCTOLOGY by Emil Granet, M.D. Lecturer, Graduate School, Columbia University; Visiting Surgeon (Proctology), Sea View Hospital, and Associate Surgeon (Proctology) French Hospital, New York; Commander (MC) USNR, 346 pages, The Year Book Publishers, Inc.

This is an excellent little book, prepared in the usual format of the Year Book Publishers. The simple approach of the author, and the emphasis upon his personal experience, make for easy reading.

Many topics are covered in this small text, although consideration of each is necessarily brief and limited due to the small size of the book. Nevertheless, it offers a good introductory discussion for the general practitioner.

AMEBIASIS by Ernest Carroll Faust, Ph.D., A.B., M.A., The William Vincent Professor of Tropical Diseases and Hygiene, Head of the Division of Parasitology, Department of Tropical Medicine and Public Health, Tulane University of Louisiana, New Orleans, Louisiana. 154 pages. Price $4.75. Charles C. Thomas, Springfield, Illinois.

This is an excellent monograph on an important disease. The authors considers etiology first, and the geographic distribution of amebiasis. This is followed by an interesting discussion on pathogenesis and pathology of amebiasis, and an excellent section on the clinical manifestations.

The final sections on diagnosis, treatment and prognosis are particularly good. All of the newer drugs are carefully evaluated.

Improved methods of diagnosis and treatment, as applied to amebiasis, will assist the public health physician as well as the individual clinician.

The book is highly authoritative, well written, and complete. Best of all, it is up to date.

It may be recommended for the proctologist, the gastroenterologist and the internist. The general practitioner will benefit from the reading of this monograph, and will find the summary at the end of each chapter of special value.

REGIONAL BLOCK by Daniel C. Moore, M.D., Director of Anesthesiology, Mason Clinic, Chief of Anesthesia, Virginia Mason Hospital, Seattle, Washington. 373 pages, 262 figures. Charles C. Thomas, Publisher, Springfield, Illinois.

This text presents a detailed, concise, readily understood description of each type of diagnostic and therapeutic block. A single technique, based upon the authors' large experience, is offered for each type of block.

There is an excellent section on regional analgesia in office practice. The author is practical throughout, providing full information on dosage and step by step illustrations of technique.

The proctologist will find an excellent section on single dose caudal block. He will also be interested in the single dose spinal analgesia technique. The proctologist who prefers to operate with pudendal block will find this technique wel described and illustrated.

Transsacral block is recommended by some proctologists for operation on the anus, rectum and soft tissues overlying the sacrum and coccyx. The technique is adequately illustrated in the text.

This book may be recommended to the general practitioner, the student anesthesiologist, and certainly to the proctologist.

EXPERIMENTAL SURGERY by J. Markowitz, M.B.E., M.B. (Tor), Ph.D., M.S. in Exp. Surg. (Minn.) Associate Professor of Physiology, University of Toronto, Visiting Professor of Physiology, Ontario Veterinary College, Guelph, Ont. Third edition. 851 pages. Price $10.00. The Williams & Wilkins Co. Baltimore, 1954.

The third edition continues to be an important guide to experimental animal surgery. The approach presented is that experimental surgery is a branch of physiology.

As one of the best texts in the field, the book may be recommended to students of surgery, regardless of specialty. The reader will find the approach basic, well illustrated, and carefully presented.

The author, as a Professor of Physiology, naturally presents surgical physiology to its best advantage.

The present edition is extensively and carefully revised. Those who have previous editions will want the present book.

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